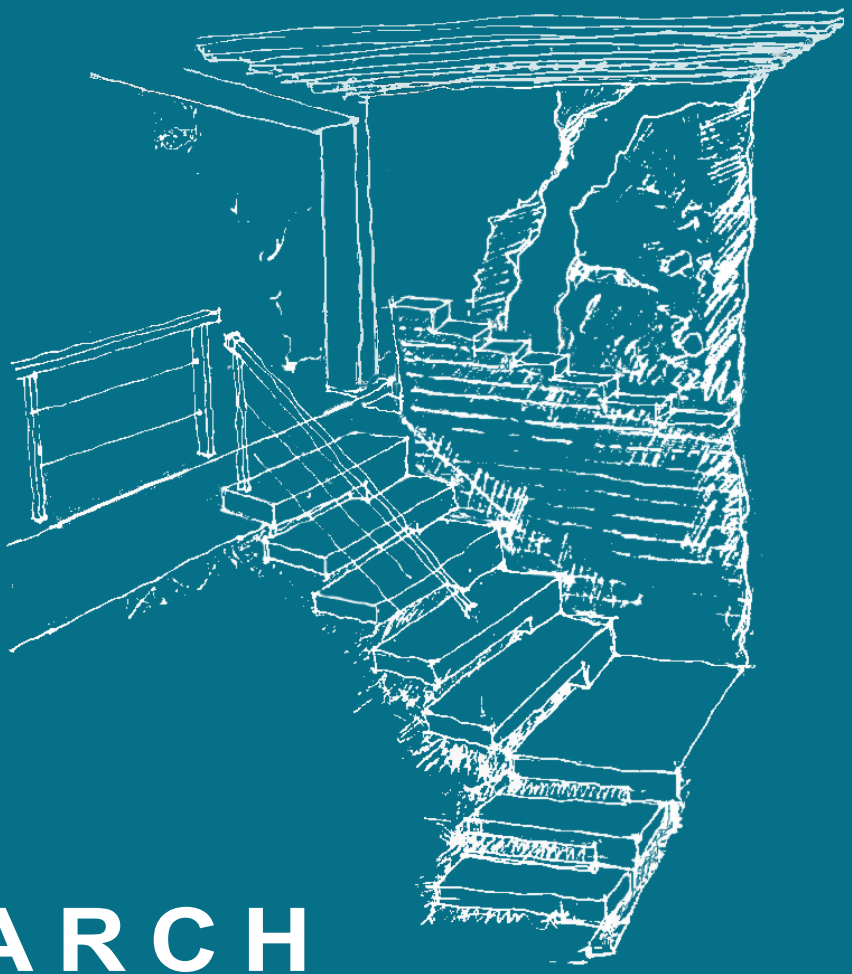
UNIVERSITY OF LIVERPOOL

MISFAT AL-'ABRIYIN, OMAN

DESIGNING FOR SUSTAINABLE HERITAGE TOURISM DEVELOPMENT: MASTER PLAN AND IMPLEMENTATION



RESEARCH PORTFOLIO

Soumyen Bandyopadhyay, Giamila Quattrone, Claudia Briguglio

ArCHIAM | Centre for the Study of Architecture and Cultural Heritage of India, Arabia and the Maghreb

Contents

Dissemination

2020 *Between the Sand and the Sea: Oman's Architectural Heritage* Public Lecture, University of Liverpool, UK

2020 *Heritage Management in the Islamic World: ArCHIAM Methods and Current Work*, University Alliance for the Silk Road, Nazarbayev University, Kazakhstan

2019 Launch Ceremony of the Development of Old Misfat al-Abriyin, Muscat, Oman

2019 *Restoration, Recording and Documentation of Earthen Architectural Heritage* Workshop, M'Hamid, Morocco

2019 *Omani Towns: Tradition of the Desert and the Sea* Public Lecture, The Aga Khan University, London, UK

2019 *Omani Towns: Tradition of the Desert and the Sea* Public Lecture, National Museum, Muscat, Oman

2019 *Gulf Architecture Project* Conference, Doha, Qatar

2019 Ismaili Centre youth guided tour of Misfat al-Abriyin, Oman

2019 *Architecture of Migration* Symposium, Leicester, UK

2019 *Managing Heritage in India and Oman: Approaches, Current Work and Future Opportunities*, National Institute of Advanced Studies, Bangalore, India

2018 *Everything Old is New Again* INTBAU World Congress, London

2018 Getty Institute's *International Course on the Conservation of Earthen Architecture*, Nizwa, Oman

Press and Media

Al-Hamra: Misfat al-Abriyin Tourism Development Plan

An experience with Omani heritage, Oman Observer article

Project to develop Misfat Al Abryeen, Radio Muscat interview with Talib Al-Makhmari, Manager Community and Media Relations at Bank Muscat, Radio Muscat

Completion of the project to develop old Misfat al-Abriyin, Bank Muscat's Twitter announcement

Rogan Cafe in Misfat Al Abriyeen Village in the Wilaya of Al Hamra, Saleh bin Khalfan al-Rahbi, Oman News Centre Reporter, 03/12/2020

University of Liverpool researchers spearhead adaptive reuse of heritage buildings for tourism development in Oman, INTBAU's Facebook announcement

Project Details

Architects:	Prof. Soumyen Bandyopadhyay, Dr. Giamila Quattrone, Claudia Briguglio
	Désirée Campolo, Matina Vrettou, Aida Hernández (ArCHIAM)
Title:	Misfat al-'Abriyin, Oman: Designing for Sustainable Heritage Tourism Development
	Master Plan and Implementation
Location:	Misfat al-'Abriyin, Oman
Collaborator:	Architectural Wall Systems (AWS), Muscat
Project Coordinator:	Noorain Jan Basha (Senior Architect, AWS)
Structural Consultant:	Nadig Consulting, Bengaluru
Contractor:	Omani Services Establishment (OSE), Nizwa
Project Manager for Bank Muscat:	Arnold D. Villasis (Watad Engineering Consultants)
Clients:	Ministry of Tourism (Heritage and Tourism Development Plan)
	Misfat Cooperative (Al Misfat al-Ahlia), (Phase-1 Implementation)
Funders:	Ministry of Tourism (Heritage and Tourism Development Plan)
	Bank Muscat (Phase-1 Implementation)
Construction completion:	December 2019
Construction cost:	£460,919.51

Research Group

Prof. Soumyen Bandyopadhyay
Dr. Giamila Quattrone
Dr. Martin S. Goffriller
Dr. Konstantina Georgiadou
Dr. Haitham Al-Abrī
Dr. Birgit Mershen
Dr. Ataa Alsalloum
Désirée Campolo
Claudia Briguglio
Paul MacMahon
Jonathan Wren
Roger Bone

Research Context

This heritage management and tourism development project at Misfat al-'Abriyin, a partially inhabited mountain oasis 200kms southwest of the capital, Muscat, is the first realised in Oman based on a cohesive regional strategy and settlement masterplan.

In 2014 the ArCHIAM Research Centre (Architecture and Cultural Heritage of India, Arabia and the Maghreb) was commissioned by the Ministry of Tourism, Oman to develop a Heritage and Tourism Development Plan (HTDP) (**Bandyopadhyay et al 2016**) for the mountain settlement of Misfat al-'Abriyin near Al-Hamra, in central Oman. An interdisciplinary team comprising architects, archaeologists, ethnographers and tourism economists at ArCHIAM developed a comprehensive strategy and a detailed masterplan for the preservation and development of the oasis settlement, which drew on the Centre's significant research, heritage management and masterplanning expertise in Oman and the Gulf region. Phase-1 of this masterplan has now been realised through architectural and urban interventions that include the restoration, rebuilding and adaptive reuse of the main gateway and information centre, a key civic space (Harat ash-Shua), a bread-making/ training place, a restaurant and residents' parking

The key questions explored through design how:

- tourism and heritage management of oasis settlements in the Oman Mountains can be approached;
- the social history and cultural of the Omani mountain oasis can shape master-planning and architectural and urban interventions;
- community input can shape heritage master planning and architectural interventions;
- sustainable development can shape master planning and architectural interventions;
- contemporary architectural aspirations and use can be integrated with conservation demands.

Primary data collected through extensive fieldwork-based research resulted in comprehensive urban/architectural survey (terrestrial; aerial) and ethnographic documentation (interviews; workshops; observations). A regional study of significant natural, archaeological and urban heritage sites proposed a networked strategy, distributing tourism focus. Traffic volume and tourism economics analysis restricted immediate parking sites for Misfat inhabitants and proposed a tourist 'gateway site' downhill.

Tribal social life and history informed the masterplan, as did studies of privacy and expatriate labour occupancy. Ethnographic study of the ancient *aflaj* water infrastructure, annual cultural events, daily social practices and morphological studies shaped the masterplan as well as the Phase-1 components.

The Phase-1 plan incorporated views of the community cooperative and ideas from the children's workshops. The architectural designs have explored how new programme and elements representing contemporary life, material and architectonic aspirations can be brought into dialogue with the restored 'old'. The masterplan proposed taking Misfat entirely off-grid, employing renewable energy sources. A largely passive design is supported by very limited use of mechanical cooling.

FUNDING

The Heritage and Tourism Development Plan was funded by the Ministry of Tourism, Oman. Phase-1 of the masterplan implementation was funded by Bank Muscat and included design services and construction.

HYPOTHESIS

Ground-breaking architectural, historical and ethnographic research and stakeholder engagement can produce high-quality masterplan and design intervention.

Integrated conservation and adaptive reuse can contribute to sustainable local development.

AIMS & OBJECTIVES

To deliver a high-quality heritage and tourism development strategy and masterplan based on primary data collection through fieldwork-based research, and test the propositions through implementation with significant stakeholder engagement.


OLD MISFAH
Restaurant B1
Gate F4
Kitchen bakery A10
Parking spaces
PROPOSAL FOR
REHABILITATION, REUSE AND RESTORATION OF TRADITIONAL STRUCTURES AND OPEN SPACES IN MISFAT AL-ABRIYIN, WILAYAT AL-HAMRA
BY ArCHIAM
Temporary visitor centre & ticket office
MODERN MISFAH

Process

The Heritage and Tourism Development Plan (HTDP), consisting of detailed documentation and analysis, a regional strategy and the Misfat masterplan, was commissioned by the Ministry of Tourism in 2014 and completed in 2016. This was followed by a phasing study with Bank Muscat (2016-17) (**Fig. 1**), and the eventual realisation of Phase-1 (info-point; bakery; restaurant; civic space; parking; pathway), supported by Bank Muscat's Corporate Social Responsibility scheme (completed 2019). The project was officially handed over to the Misfat Cooperative, Al Misfat al-Ahlia on Monday 30 November 2020 (**Fig. 2**).

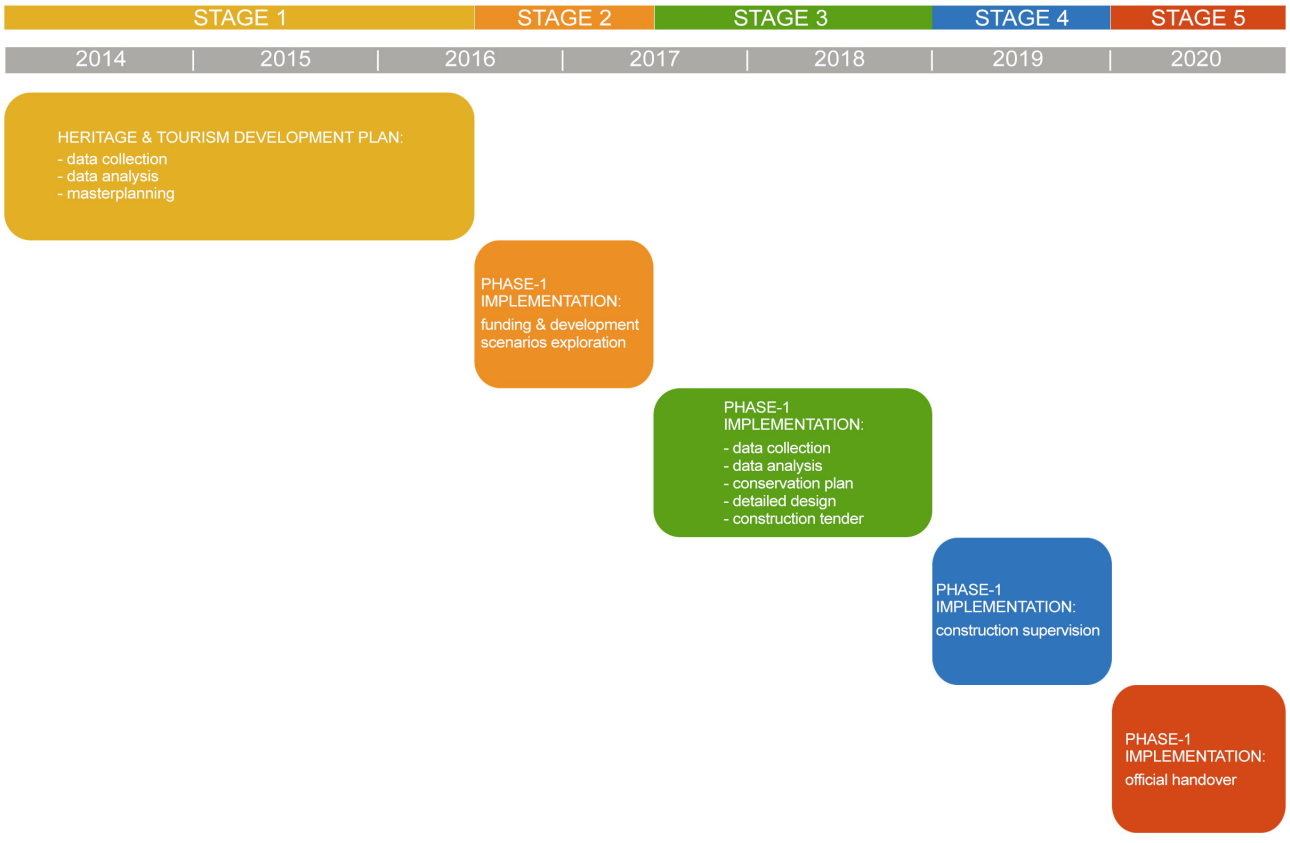


Fig. 1 (opposite page): Phase-1 proposal
Fig. 2 (above): Gantt chart illustrating the process

Methods

Systematic fieldwork-based survey, conducted over two campaigns (September-October 2014; July 2017), covered architectural, settlement and oasis irrigation infrastructure (*aflaj*) documentation, providing thorough understanding of the morphology, scale and physical characteristics of the settlement and its wider agrarian and natural context (**Figs. 3, 4, 5**).

The documentation, including on-site and off-site work, involved:

- use of historical aerial photography;
- terrestrial measured survey of settlement, including agricultural terraces and irrigation channels;
- comprehensive, sequentially conducted photo-documentation;
- comprehensive orthographic digital documentation drawings.

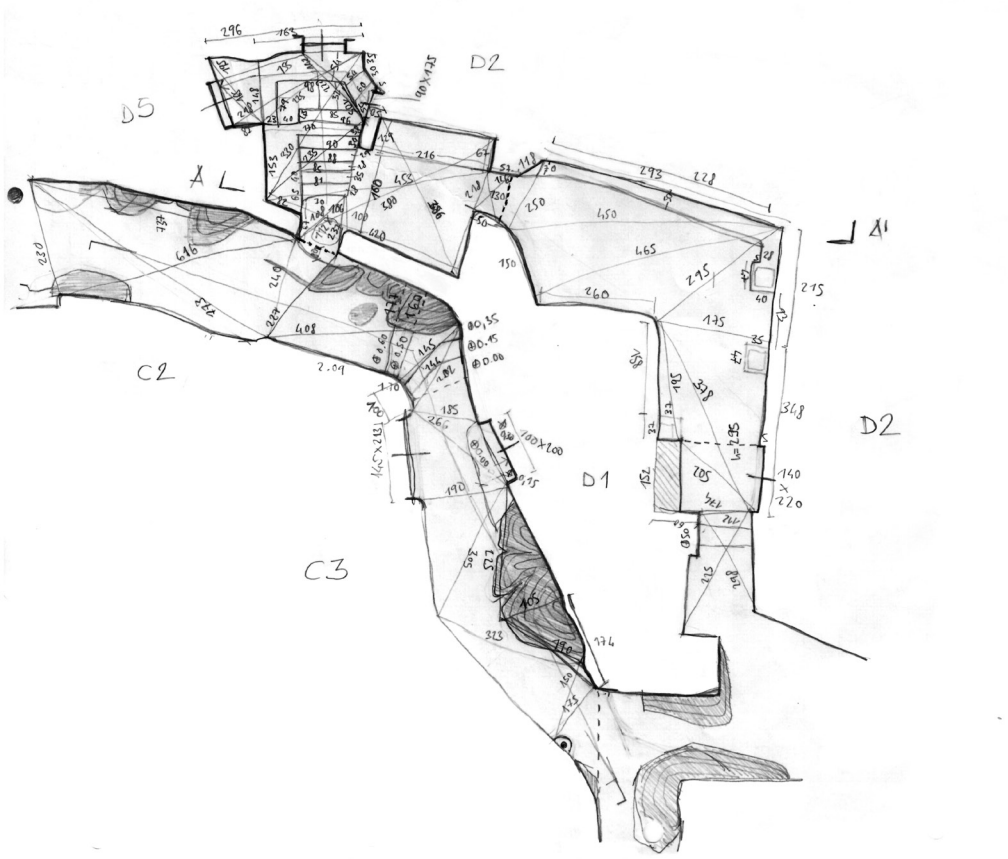
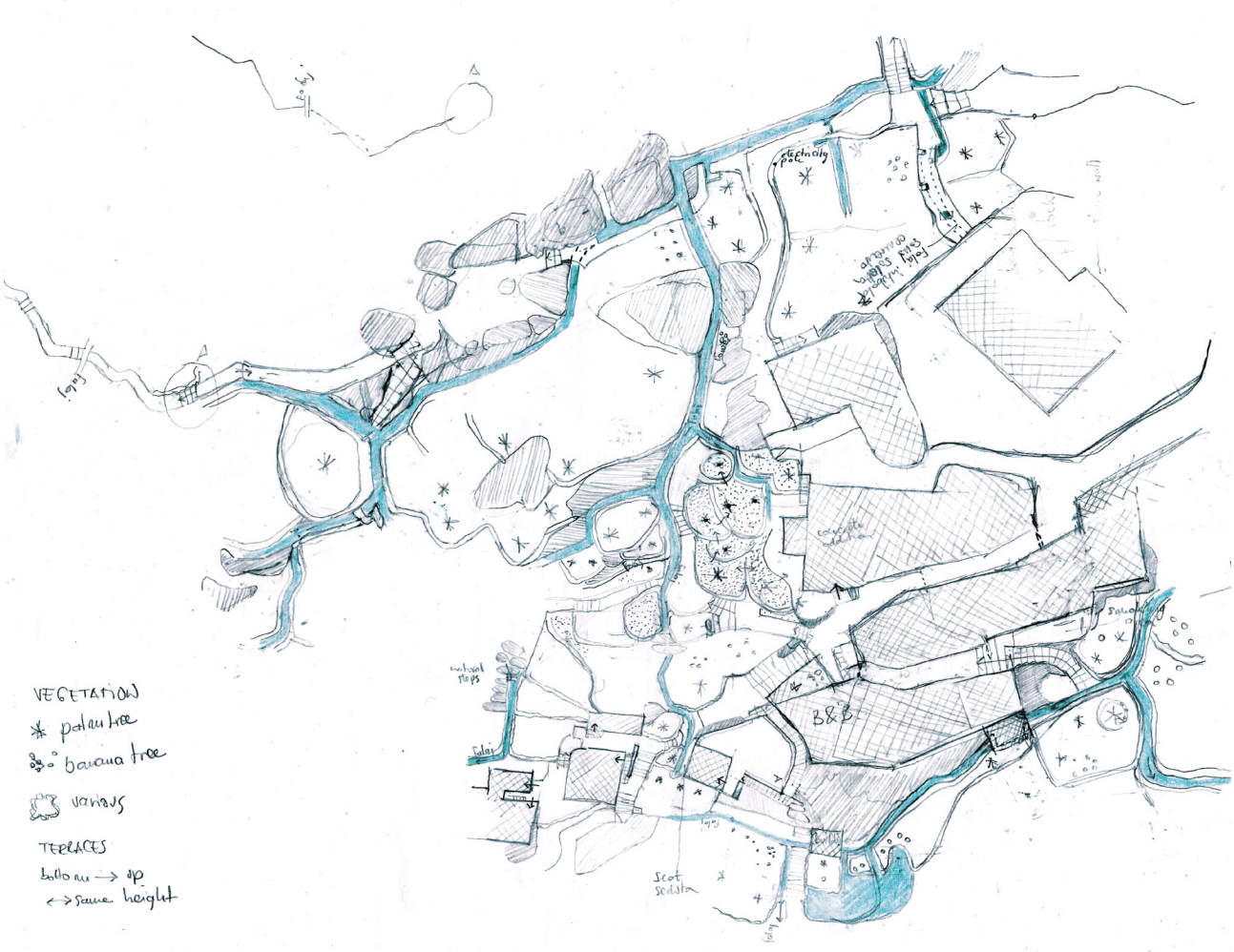
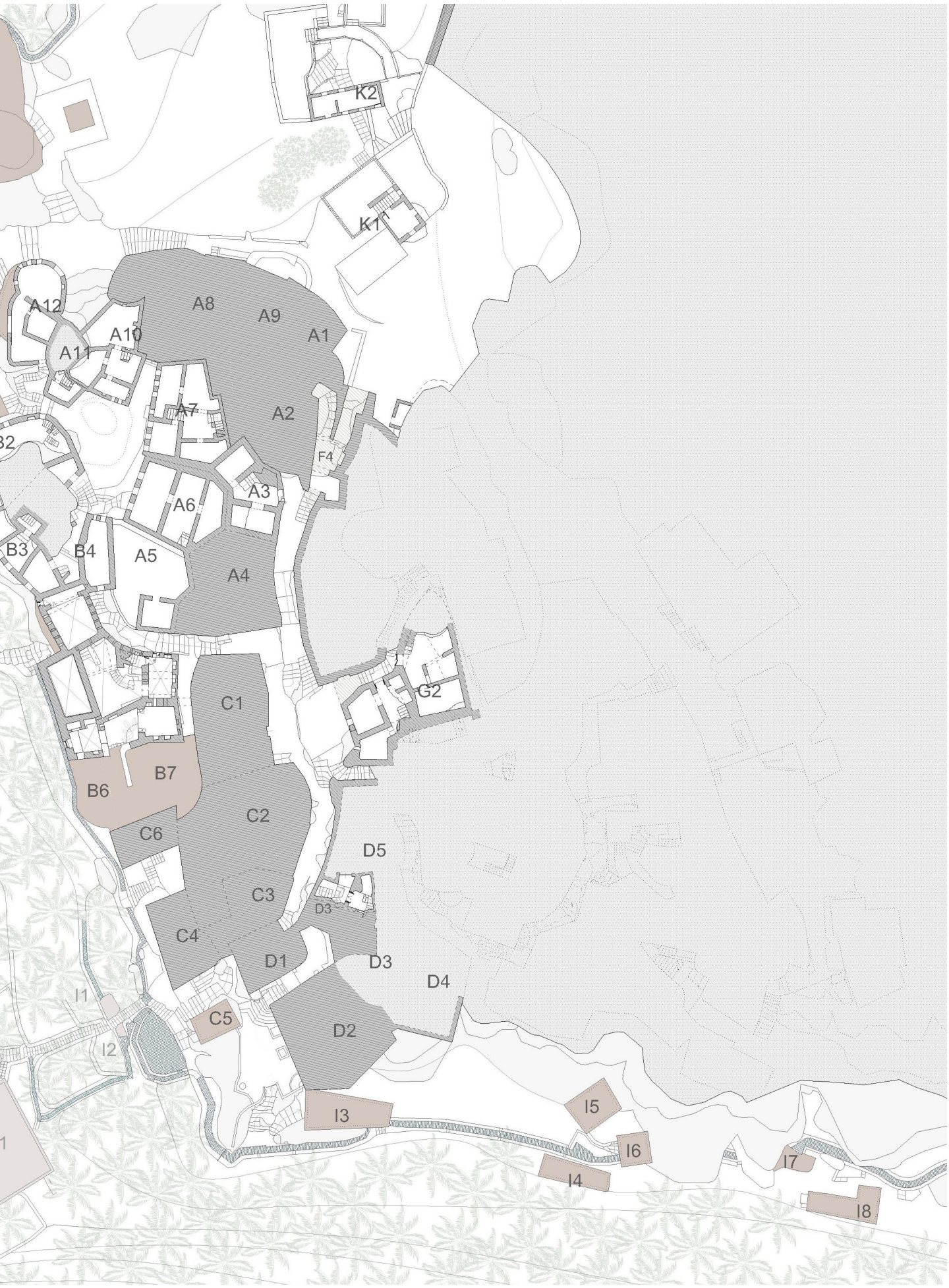


Fig. 3 (above): field sketches showing measured streets and buildings, and construction details
Fig. 4 (opposite page): field sketch showing water channels and vegetation types
Fig. 5 (over pages): settlement plan


VEGETATION
palm tree
banana tree
various
TERRACES
bottom → up
↔ same height
B&B

MISFAT AL-ABRIYIN
Plan07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I6
I7
I4
I8

A state of preservation and failure recording of extant original fabric was carried out to map various failure types and establish a complete, up-to-date evidence base (**Fig. 6**)

Complementing the drawn documentation, ethnographic fieldwork provided a detailed understanding of:

- social structure and land ownership (**Figs. 7, 9**);
- spatial use and practices, including gender-segregated places for congregation, bathing and praying;
- the management of the *aflaj* irrigation system (employing sundials; star-gazing);
- oral history concerning significant structures and spaces;
- privacy needs and developmental aspirations.

This took place through semi-structured and extended interviews with tribal clan elders, house owners, the keeper of the *aflaj*, a former master builder, and people currently involved in tourism (management, service, guiding, food preparation) (**Fig. 8**).

Participant observation during daily rituals and 'Eid festivities also supported the ethnographic work.

Comparative data came from published primary investigations undertaken by the ArCHIAM team at 15 other oasis sites across Oman (e.g., **Bandyopadhyay et al 2014; Bandyopadhyay 2011**).

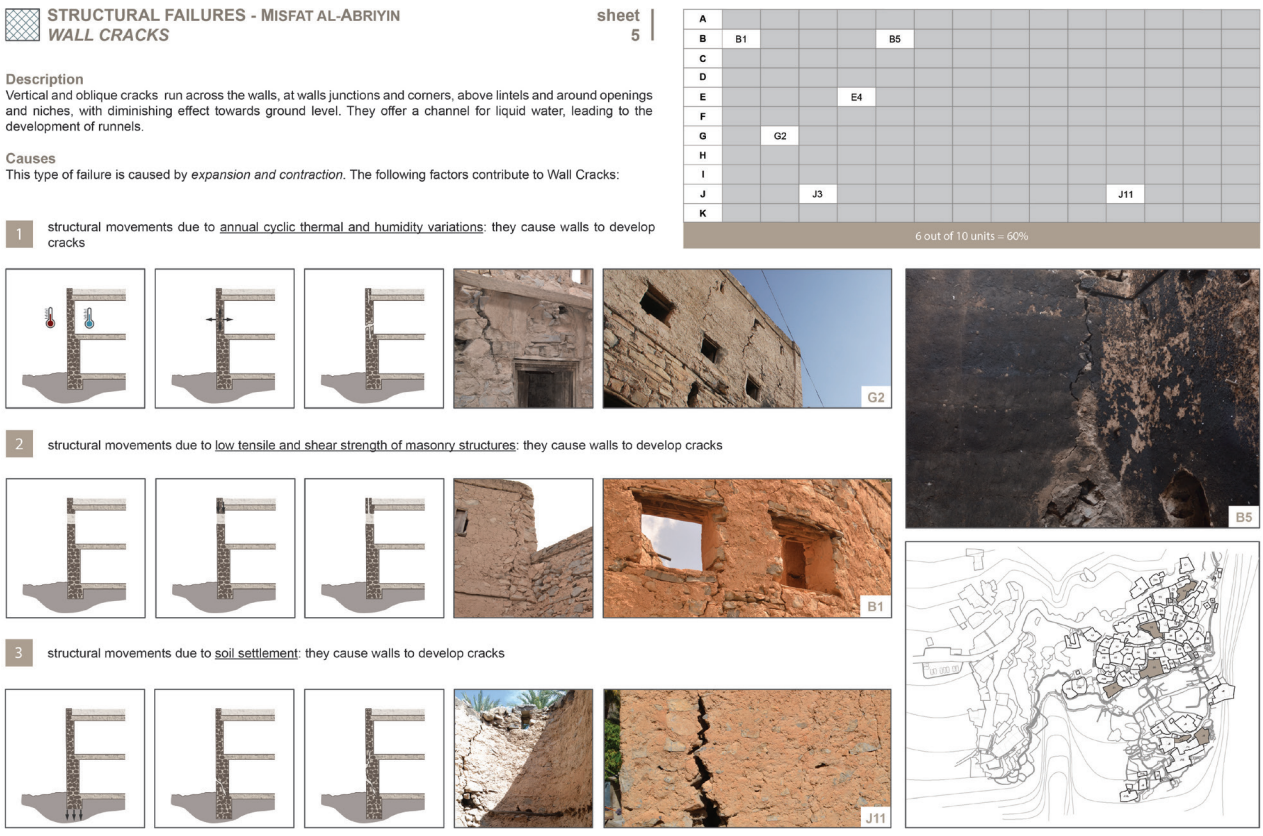
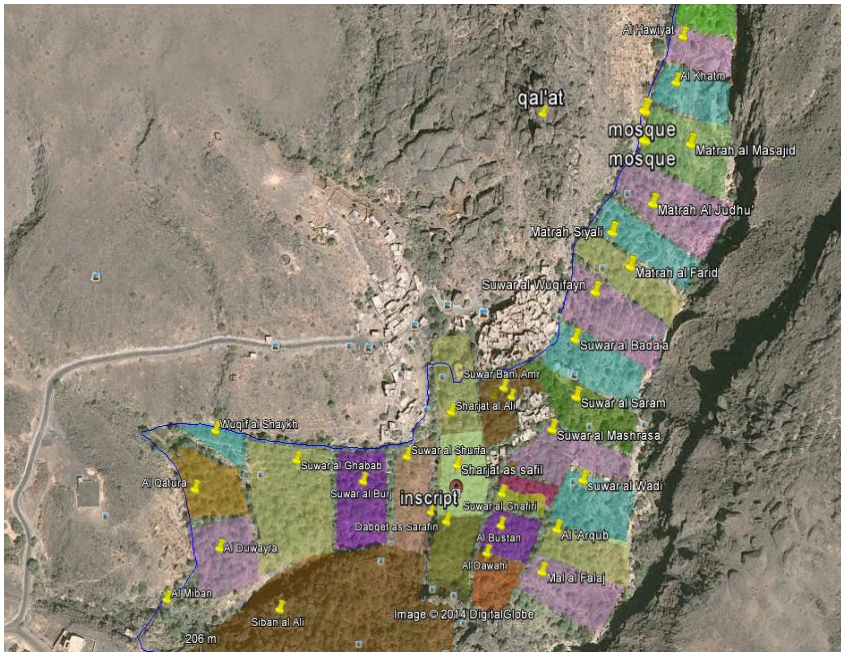


Fig. 6: structural failure analysis



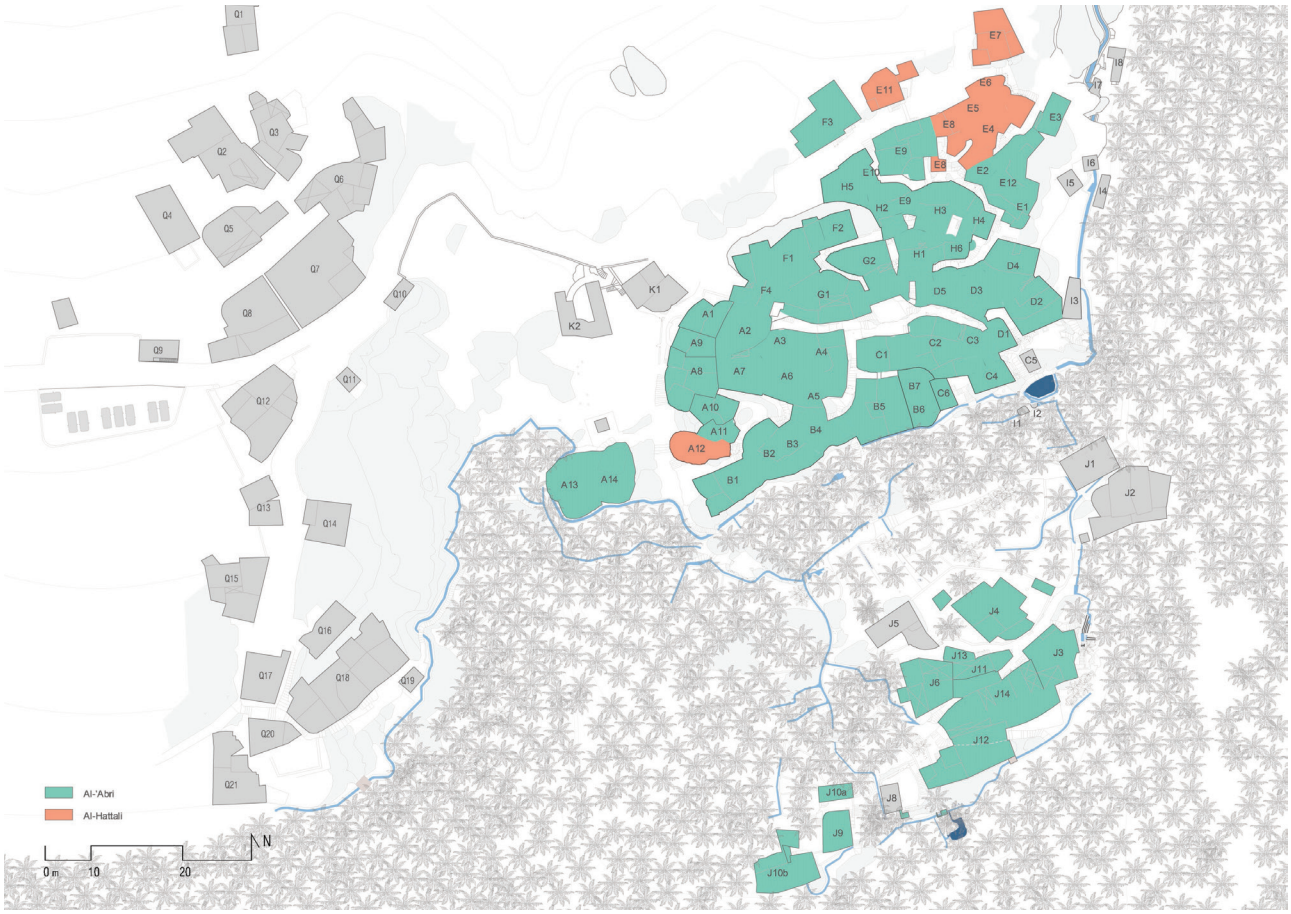


Fig. 7 (top, left): map showing Misfat's land ownership

Fig. 8 (top, right): ArCHIAM team members interviewing Misfat resident

Fig. 9 (bottom): analytical drawing showing tribal make-up

Research Questions

RQ 1

How can tourism be managed to safeguard the heritage of relatively remote sites in Oman?

RQ 2

How can knowledge of social history of the Oman Mountains contribute to heritage management planning, and architectural and urban interventions?

RQ 3

How can community input shape heritage engagement, master planning and architectural interventions?

RQ 4

How can sustainable development shape master planning and architectural interventions?

RQ 5

How can contemporary architectural aspirations and use be integrated with conservation demands?

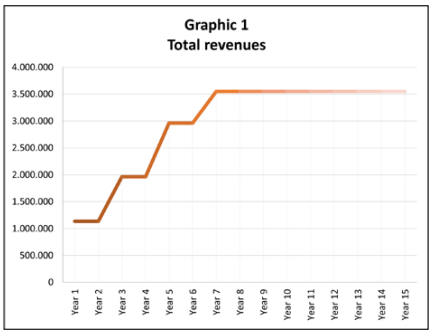
RQ 1. How can tourism be managed to safeguard the heritage of relatively remote sites in Oman?

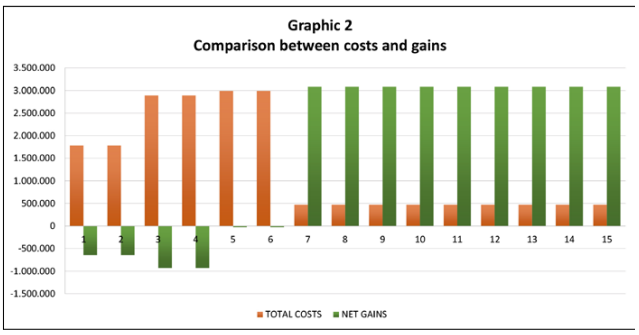
The Heritage and Tourism Development Plan for Misfat al-'Abriyin (HTDP) is underpinned by two key notions:

- **tourism development as public and social good** (**Jamal and Getz, 1995**); the HDTP generates benefits that are shared across multiple stakeholders (Ministry of Tourism; Bank Muscat; Misfat Community Cooperative, Misfat Al-Ahlia). ArCHIAM-suggested alternative development options were considered by this group and a strengthened Cooperative led the community contribution towards brief development, detail design and implementation for Phase-1;
- **heritage as part of an economic development model** based on the principles of sustainable resource use (**Figs. 10, 11**) (**UNWTO, 2013; Council of Europe, 2005**).

The HDTP integrates heritage management with development, and tests it from social and tourism economics perspectives. The use of local material and building techniques is carefully complemented by a limited modern material palette. A largely passive design is complemented by very limited use of mechanical cooling.

The HTDP puts forward a **sustainable tourism development model**. Visitor experience is enhanced through sympathetic insertion of modern provisions within the traditional built environment, meeting the current economic, social and cultural needs of the local population, while safeguarding ecological processes, biodiversity, cultural integrity and life support systems (**UNWTO, 1993**).





		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Revenues (OR)	ENTRANCE FEE	269,100	269,100	538,200	538,200	800,280	800,280	800,280	800,280	800,280	800,280	800,280	800,280	800,280	800,280	800,280
	B&B ACCOMODATION	146,250	146,250	234,000	234,000	438,750	438,750	438,750	438,750	438,750	438,750	438,750	438,750	438,750	438,750	438,750
	HOTEL	0	0	292,500	292,500	585,000	585,000	1,170,000	1,170,000	1,170,000	1,170,000	1,170,000	1,170,000	1,170,000	1,170,000	1,170,000
	VILLAS	0	0	175,500	175,500	175,500	175,500	175,500	175,500	175,500	175,500	175,500	175,500	175,500	175,500	175,500
	TOURISM PRODUCTS	718,800	718,800	723,000	723,000	961,200	961,200	965,400	965,400	965,400	965,400	965,400	965,400	965,400	965,400	965,400
	TOTAL REVENUES	**1,134,150**	**1,134,150**	**1,963,200**	**1,963,200**	**2,960,730**	**2,960,730**	**3,549,930**	**3,549,930**	**3,549,930**	**3,549,930**	**3,549,930**	**3,549,930**	**3,549,930**	**3,549,930**	**3,549,930**
Costs (OR)	OLD MISFAT AL-'ABRIYIN	1,000,917	1,000,917	1,209,040	1,209,040	812,720	812,720	0	0	0	0	0	0	0	0	0
	MODERN MISFAT AL-'ABRIYIN	390,300	390,300	1,199,050	1,199,050	1,707,675	1,707,675	0	0	0	0	0	0	0	0	0
	RUNNING COSTS	390,150	390,150	483,450	483,450	468,450	468,450	468,450	468,450	468,450	468,450	468,450	468,450	468,450	468,450	468,450
	TOTAL COSTS	**1,781,367**	**1,781,367**	**2,891,540**	**2,891,540**	**2,988,845**	**2,988,845**	**468,450**	**468,450**	**468,450**	**468,450**	**468,450**	**468,450**	**468,450**	**468,450**	**468,450**
	NET GAINS	**-647,217**	**-647,217**	**-928,340**	**-928,340**	**-28,115**	**-28,115**	**3,081,480**	**3,081,480**	**3,081,480**	**3,081,480**	**3,081,480**	**3,081,480**	**3,081,480**	**3,081,480**	**3,081,480**

Fig. 10 (above): graphic comparing costs and revenues in 15 years
Fig. 11 (below): table showing costs and revenues in 15 years

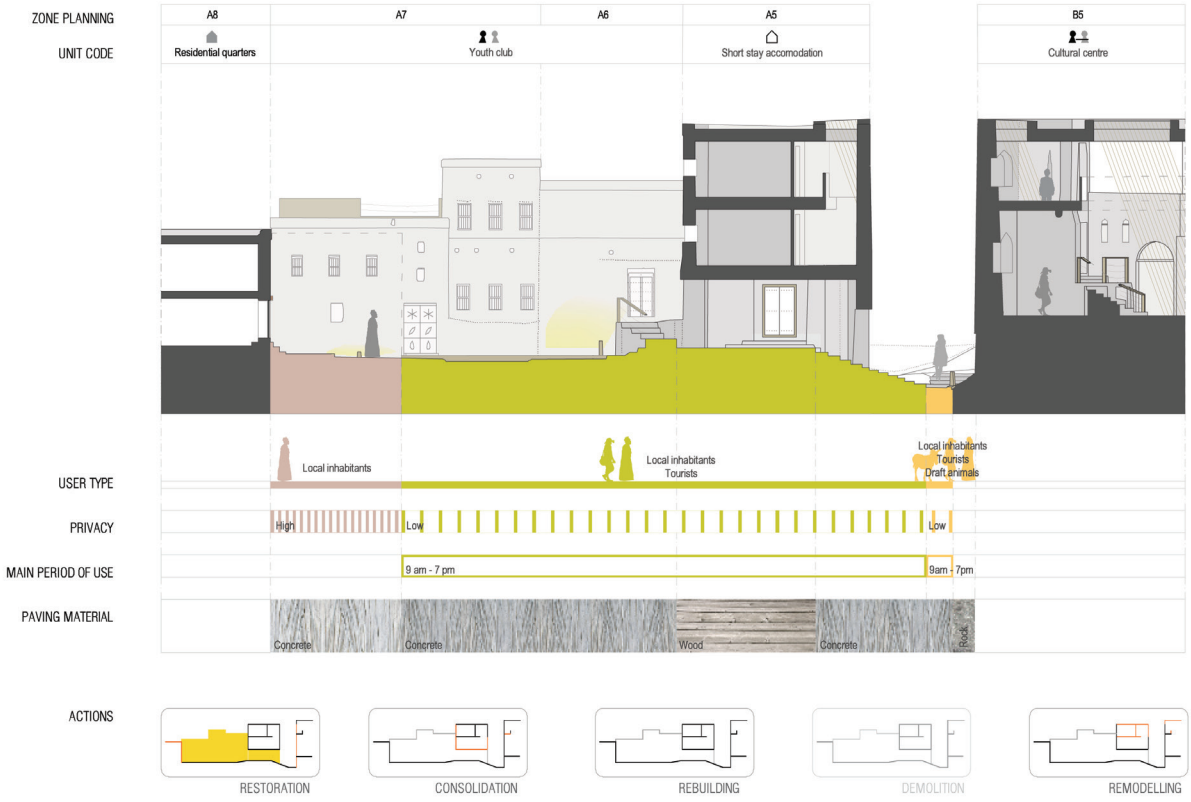
This model draws on the paradigms of **tourism in peripheral destinations** - the tourist's search for experiential authenticity, the host community's welcoming approach, the place-richness in both natural and cultural heritage assets - which have led to the involvement of a wide cross-section of the resident population in visitor hospitality (**Simpson, 2001**). The HTDP takes into account the regional sites of cultural, historic and natural interest, all lying within an hour's drive from Misfat al-'Abriyin, and develops a strategy as to how these can be included into the visitor experience.

The HTDP addresses local **perceptions of, and concerns about, tourism-related threats, such as infringement of residents' privacy, interference with daily life activities and local customs**. Drawing on the findings of the tourism economics survey undertaken, the HTDP suggests **small-scale, phased and controlled tourism development**, which meets the site's Tourism Carrying Capacity (**Simpson, 2001**) by capping season-specific daily visitors and vehicle numbers based on the village's hourly capacity during peak hours, determining accommodation needs, indicating optimum visit durations and routes, and specifying modes of transport to/from the site.

Drawing on the above premises and considering ongoing initiatives, the HTDP proposes new uses for **both civic and private buildings that are grouped in programme-specific clusters** focused on agriculture, trade, accommodation, the experience of traditional culinary and pastoral life (**Fig. 12**). All existing transit patterns (**Fig. 13b**) are retained to enhance traditional movement hierarchy as well as privacy. New paving materials (textured concrete; timber boardwalks) (**Fig. 13a**) are carefully chosen to complement the existing stone to differentiate routes based on use patterns.

Fig. 12 (over pages): masterplan strategy showing programme-specific clusters based on settlement history and ethnographic research

Figs. 13a-b (opposite page): masterplan section through Harat ash-Shua (top), map showing hierarchy of existing transit patterns (bottom)


ZONE PLANNING
UNIT CODE
A8
Residential quarters
A7
Youth club
A6
A5
Short stay accomodation
B5
Cultural centre
USER TYPE
Local inhabitants
Local inhabitants
Tourists
Local inhabitants
Tourists
Draft animals
PRIVACY
High
Low
Low
MAIN PERIOD OF USE
9 am - 7 pm
9am - 7pm
PAVING MATERIAL
Concrete
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ACTIONS
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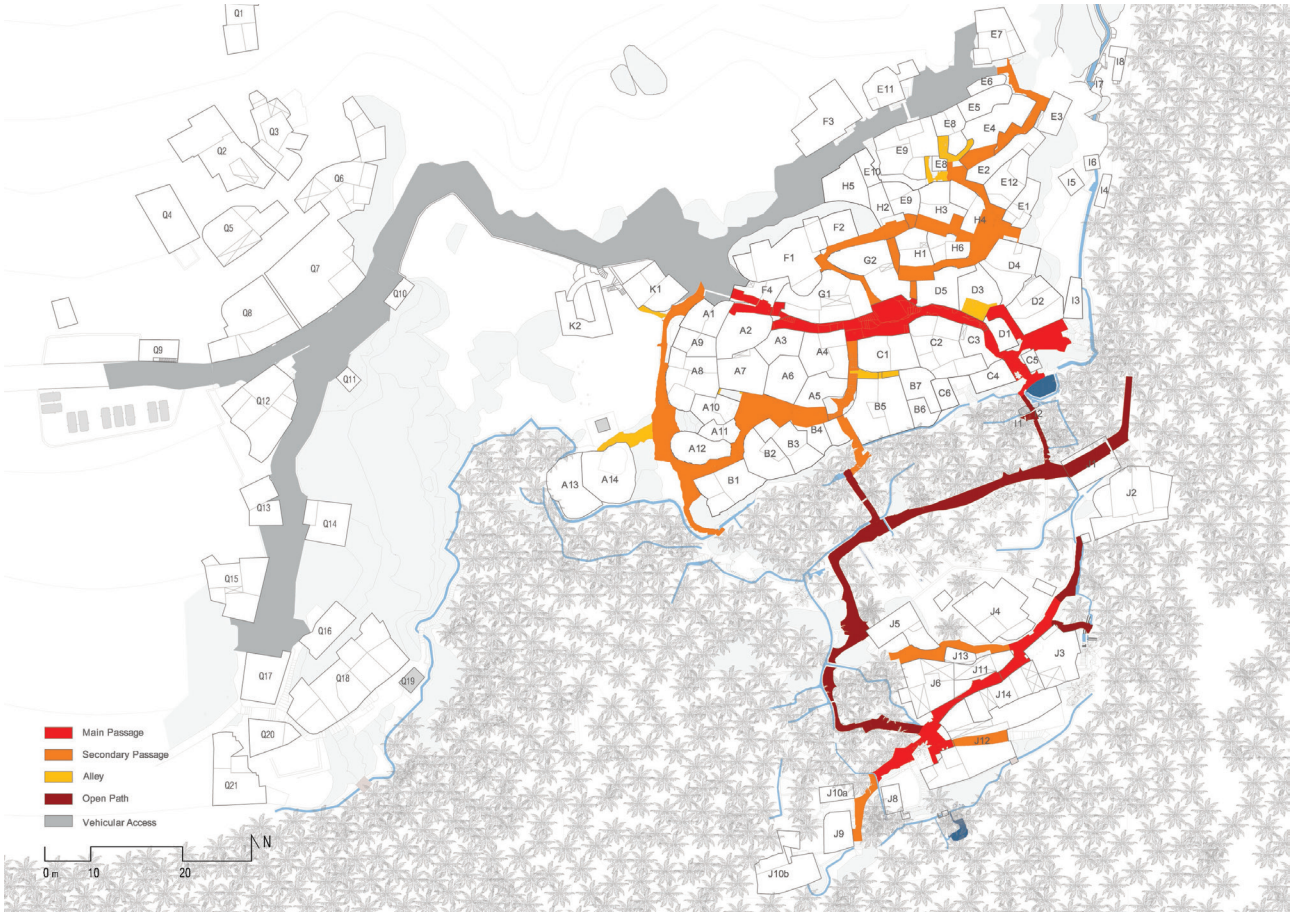
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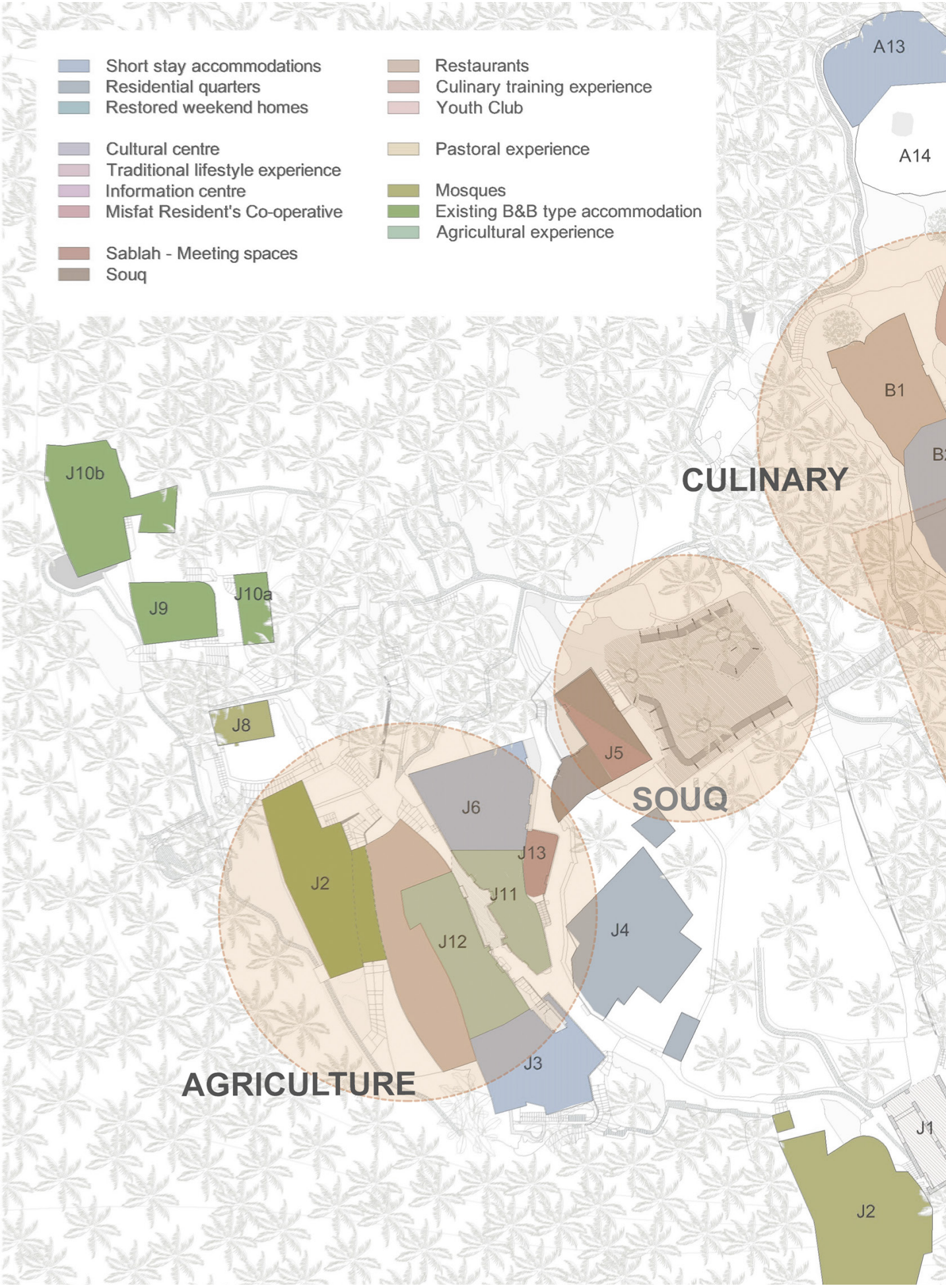
Short stay accommodations
Residential quarters
Restored weekend homes
Cultural centre
Traditional lifestyle experience
Information centre
Misfat Resident's Co-operative
Sablah - Meeting spaces
Souq
Restaurants
Culinary training experience
Youth Club
Pastoral experience
Mosques
Existing B&B type accommodation
Agricultural experience
A13
A14
B1
CULINARY
J10b
J9
J10a
J8
J5
SOUQ
J6
J13
J2
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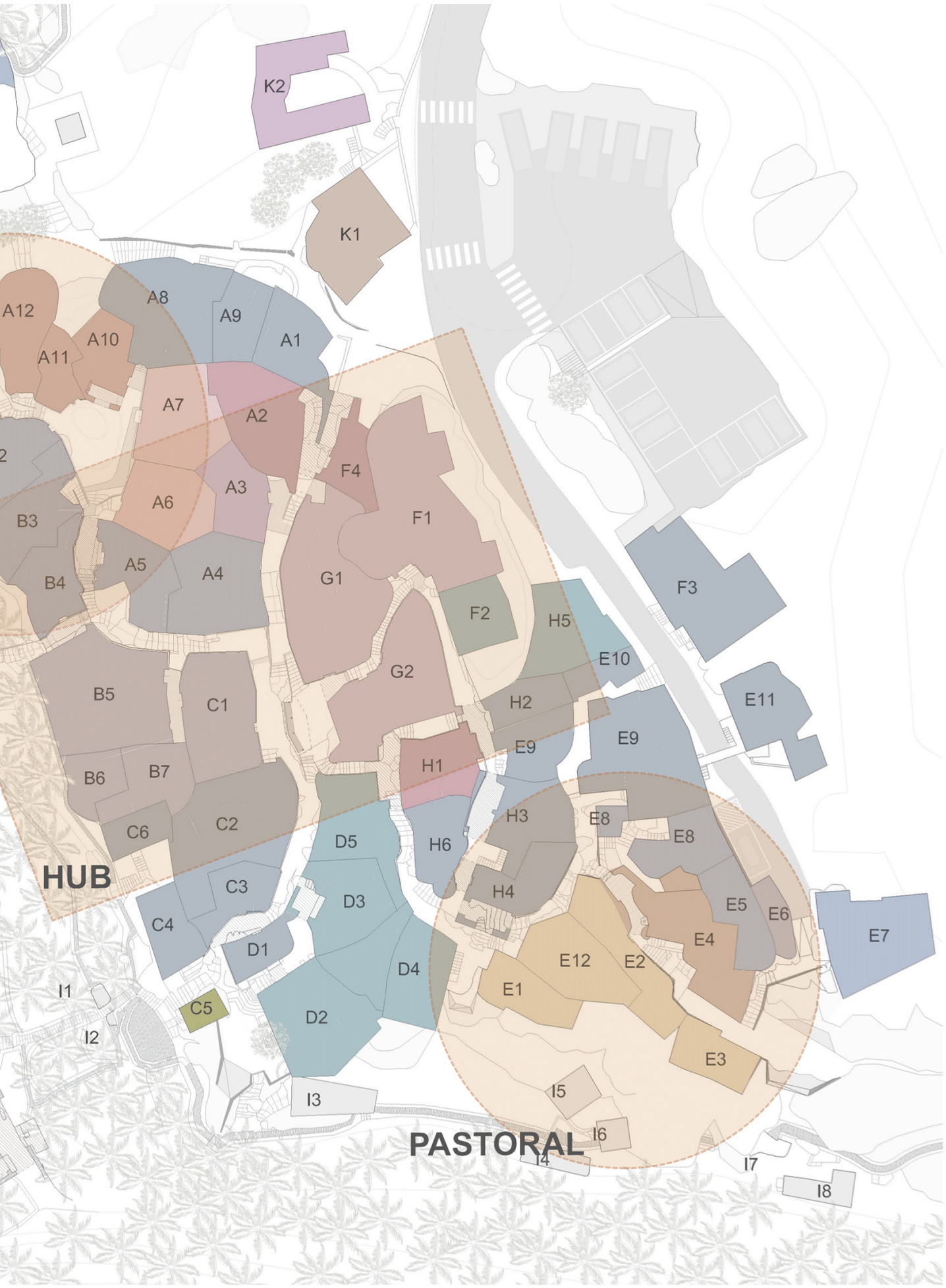
J4
J3
AGRICULTURE
J1
J2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HUB
PASTORAL

RQ 2. How can knowledge of social history of the Oman Mountains contribute to heritage management planning, and architectural and urban interventions?

Based on the ethnographic and physical documentation, the masterplan,

a. addressed **settlement morphology and orientation** by recognising the front-to-back reversal that took place (mid-1970s) and acknowledged this by reinstating the market (*suq*) in its original location. It reinforced activities in the 'Eid roasting area (**Fig. 14**), the Harat ash-Shua (implemented, Phase-1);

b. programmatically interpreted **socio-spatial differentiation** based on residents' existence (settled; semi-nomadic, *shawawi*, peripheral) and livelihood (agriculture; animal husbandry), within a largely mono-tribal organization;

c. reinterpreted **civic spaces** by reinstating the now-extinct market (*suq*) in its original location (**Fig. 15**) and by enhancing the theatricality of the event space, Harat ash-Shua;

d. proposed the **conservation of the irrigation system** (*aflaj*), network of channels and the flow control mechanisms as an important tourist attraction;

e. consolidated proposed Omani 'second homes' with occupied residences to ensure **neighbourhood privacy** and establish distinct touristic/private domains;

f. proposed **traffic management** system for its residents and tourists, based on traffic volume analysis and carrying capacity, and implemented restoration of the **main public pedestrian route** and stormwater drainage system (implemented, Phase-1);

g. recognised the **distinct dwelling sub-type** and proposed the reuse of key properties of social, historical and formal interest in the old core and along the original 17th century wall and entrance. Comparative information was drawn from Wilkinson 1977; Carter 1982; Gaube 2012; Bandyopadhyay 2011.

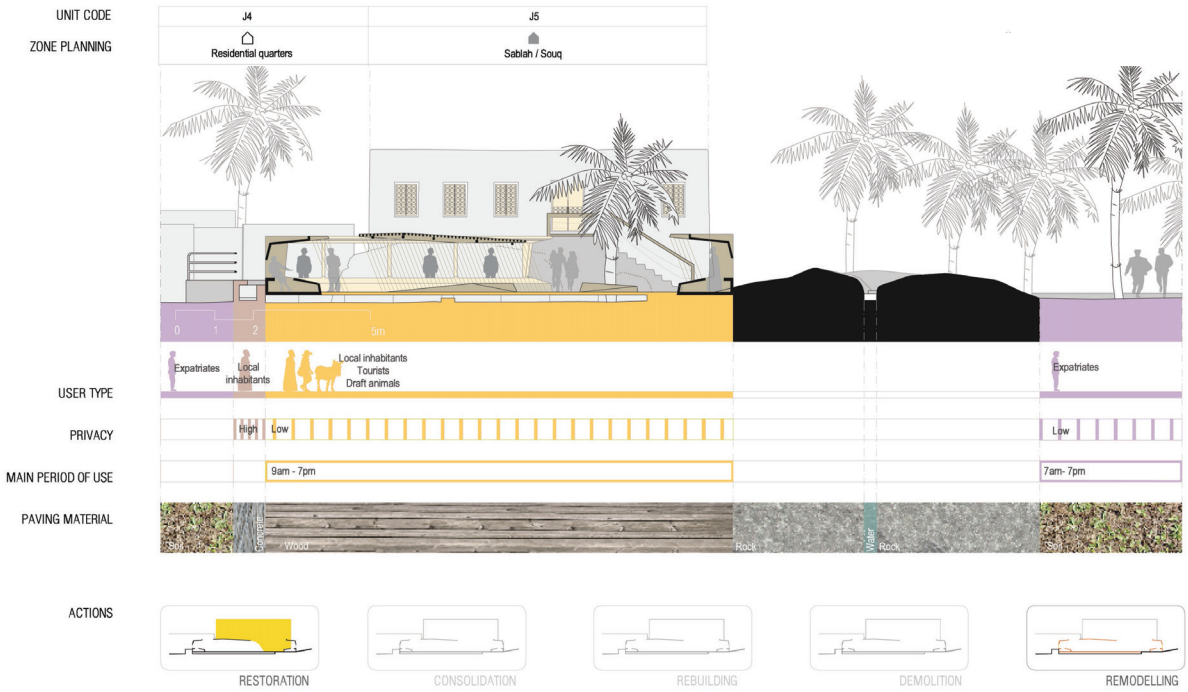


Fig. 14 (opposite page): Harat ash-Shua: community gathered around the *tannur* during 'Eid preparations
Fig. 15 (above): masterplan section through the proposed reinstated market (*suq*)

RQ 3. How can community input shape heritage engagement, master planning and architectural interventions?

Drawing on Murphy's notion of **tourism as a sociocultural activity involving both local residents and tourists** (**Murphy, 1985**) and applying internationally recognised adaptive reuse concepts and strategies, the Misfat HTDP and its implementation have pioneered a **community-led approach in heritage tourism decision-making in Oman**, which,

- uniquely moves away from monument-focused, top-down conservative restoration practice towards integrated heritage management and development;
- aims to sustain the life of the resident community through key revenue-generating activities, while diversifying the economy and increasing the tourism potential of the wider region;
- aims to generate revenue to enhance the self-esteem and economic independence of the community, stimulate new local enterprises to empower young adults and women (**Simpson, 2001**).

The Misfat Cooperative (Al Misfat al-Ahlia) was actively involved throughout the process – from master planning to phasing to implementation, to ensure,

- that local needs were met, and traditional customs safeguarded;

Fig. 16: presentation of the masterplan proposal to the community

- the widest local consensus over the proposed heritage tourism development strategies and schemes (**Fig. 16**).

The children of Misfat participated in a series of design workshops (**Fig. 17**), in which they:

- expressed their aspirations about the sites earmarked for development (**Figs. 18a-b, 20a-b**);
- "learned by doing", about the history and heritage of their home village;
- gained awareness of the impelling need to safeguard them.

Their suggestions provided inspiration for the design team to develop rehabilitation, reuse and restoration schemes for the traditional structures and open spaces (**Figs. 19, 21**).

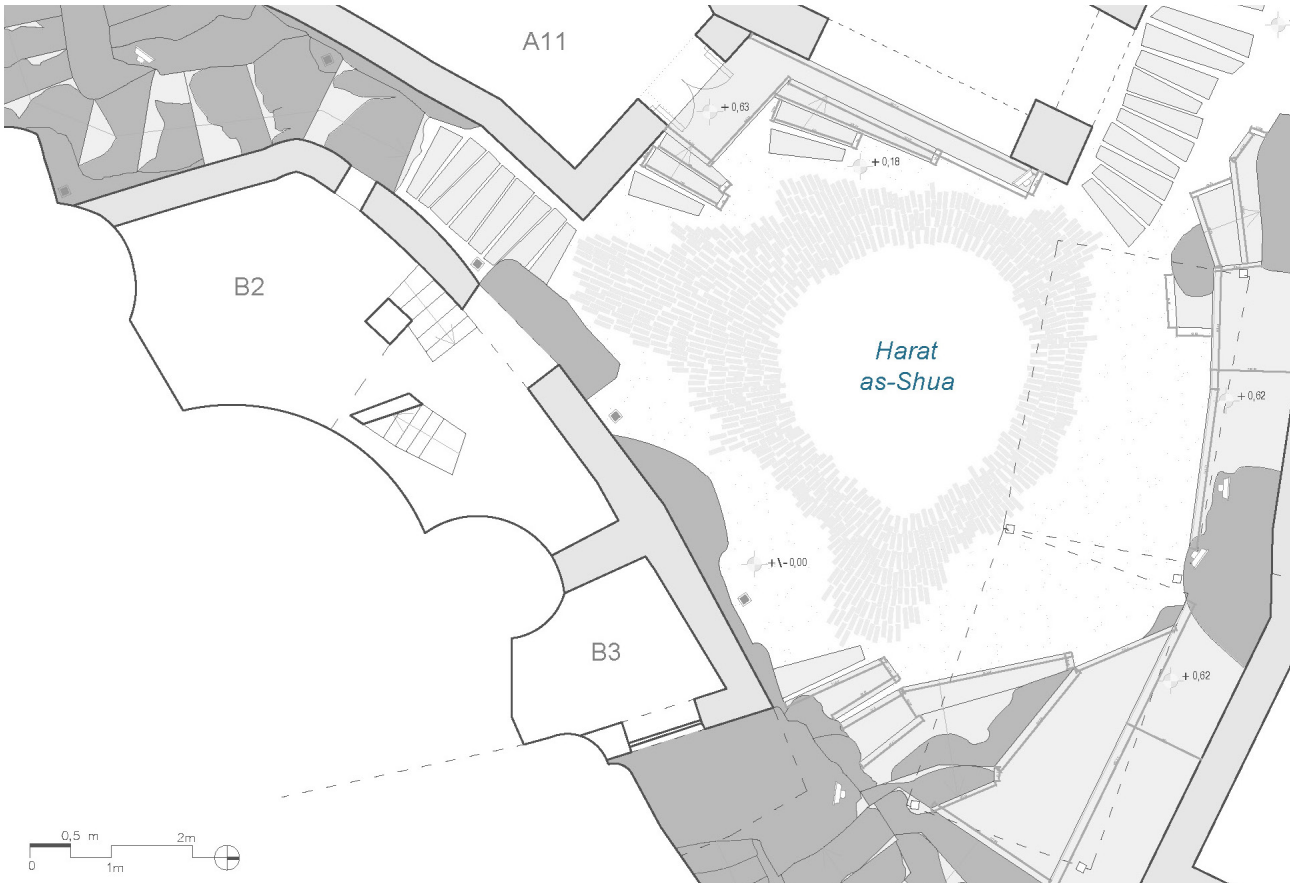
Since the study took place and, more recently, following the Phase-1 development,

- 5 new heritage style B&Bs have commenced operation, with 2 under development;
- these guesthouses utilise F&B prepared and supplied by the local community;
- several additional community-led activities have also emerged, including: a museum, local honey and grocery stores, and a café selling local craft items.

Fig. 17: workshops participants gathered in Harat ash-Shua

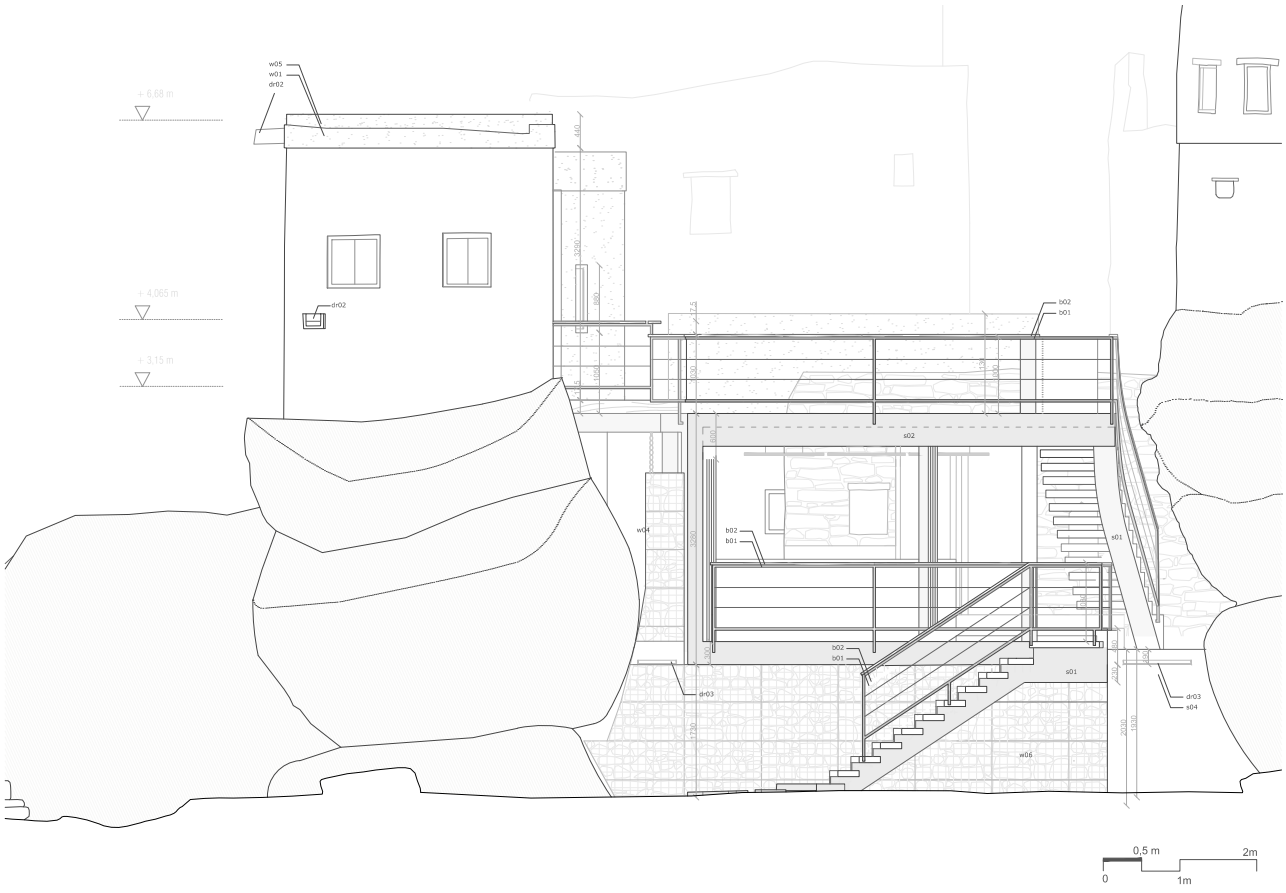
Figs. 18a-b: participants working on their proposal for Harat ash-Shua, and final model

Fig. 19: Harat ash-Shua, plan



Figs. 20a-b: participants working on their proposal for the restaurant (B1), and final model

Fig. 21: restaurant (B1), south elevation facing the palm tree gardens



RQ 4. How can sustainable development shape master planning and architectural interventions?

The HTDP suggests detailed strategies aimed to **integrate local sustainable development with heritage preservation through tourism-led growth that safeguards and enhances the natural and cultural assets while economically sustaining the resident community.**

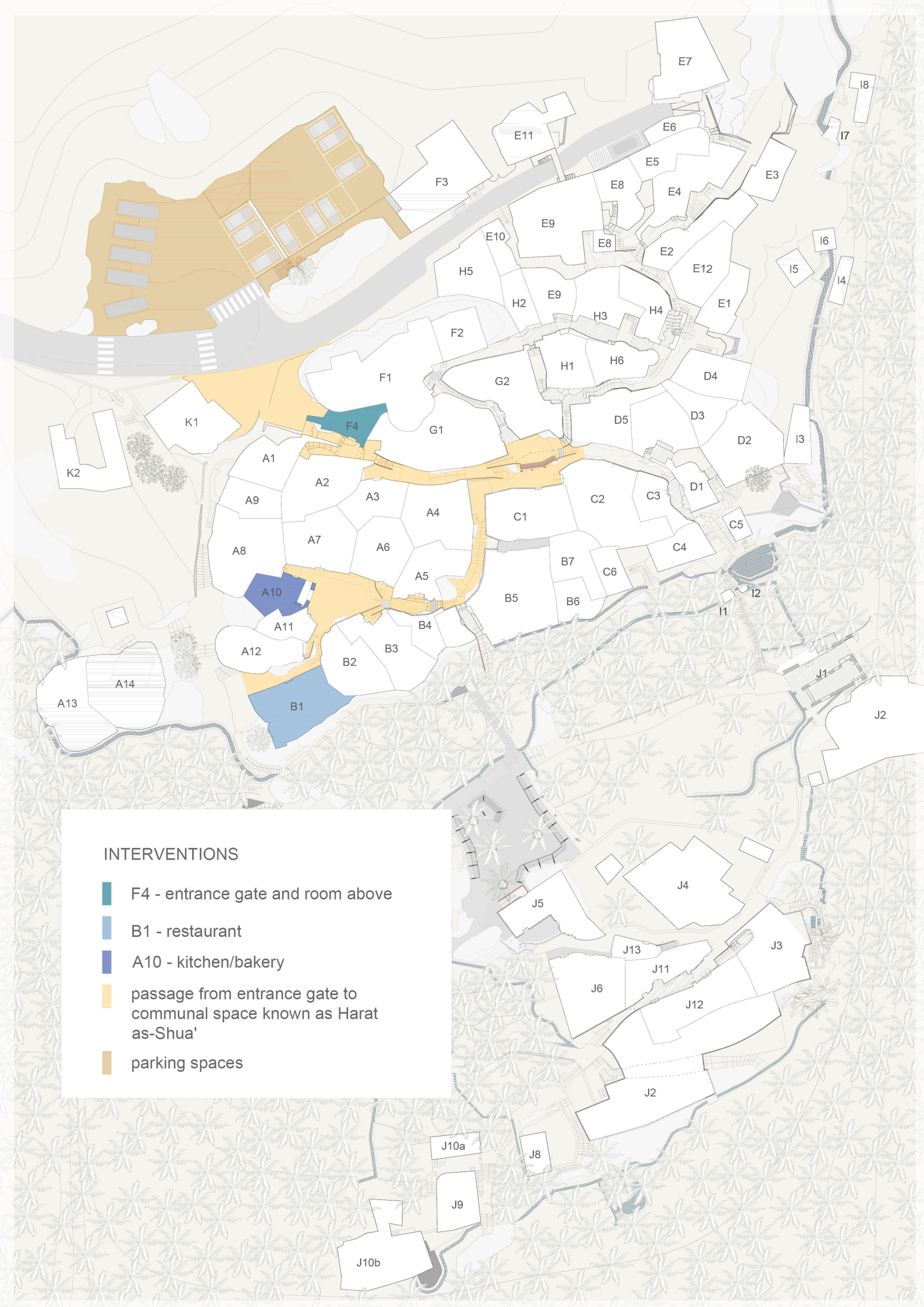
The design project implements these strategies through the **restoration, rebuilding and adaptive reuse of selected buildings and open spaces** (**Figs. 22a-b**). The main access gate (F4) is converted into a **shop/info point/ gallery** where visitors can get information on the village and buy local crafts items. A house (A10) is developed as a kitchen/bakery where people can buy bread, but also get an immersive experience of Omani bread-making. Through observation of traditional bread-baking and participation in cooking workshops, visitors will receive an authentic, first-hand experience of local intangible heritage, which, in turn, will contribute to the co-creation of value in the regional tourism offering (**Ramkissoon & Uysal, 2014**).

Another house (B1) is turned into a **small restaurant**, where people can dine both indoors and outdoors. The main passageway connecting F4 to B1 is restored and lit, while the adjoining civic space, **Harat ash-Shua**, which has a sunken pit for communal meat-roasting, is reorganized in order to enable both transit and gathering in connection with the new facilities. **Parking spaces** are created outside of the settlement to regulate traffic in and out of it.

The **small-scale business operations** to be hosted in the three developed sites **are expected to generate income for the community, thus invigorating the local economy and acting as an incentive to the settlement's re-occupation, while simultaneously preserving its cultural heritage and enhancing the visitors' experience** (**Aaas et al., 2005**).

Areas of Intervention	Use	Intervention type	Area (sqm)	Rate / type of intervention	Cost	A	B	C
A10	Kitchen/Bakery	*Adaptive re-use*	52.8	OMR 380/sqm	OMR 20.091			
B1	Terrace Restaurant	*Adaptive re-use*	100	OMR 380/sqm	OMR 38.000			
F4	Sablah & gate entrance	*Adaptive re-use*	88	OMR 380/sqm	OMR 33.489			
	Sablah & gate entrance	*Reconstuction*	88	OMR 310/sqm	OMR 27.280			
J5	Market	*(new build) Decking and Stalls*	175	OMR 50/sqm	OMR 8.750			
	Sablah	*Restoration*	54	OMR 5000 total	OMR 5000			
	Toilets	*Adaptive re-use*	20	OMR 380/sqm	OMR 7.600			
	Kitchen	*New build*	27	OMR 400/sqm	OMR 11.200			
F1	Training areas , café & toilets	*Adaptive re-use*	252	OMR 380/m	OMR 97.720			
Parking spaces	-	*Excavation & grading*	Complete area 900	OMR 30/sqm	OMR 27.000	M		M
	-	*Excavation & grading*	Partial area 460	OMR 30/sqm	OMR 13.800			
Signage & Solar lighting	-	-	All areas of intervention	-	OMR 12.000	x	x	x
Biogas & fertilizer Generation	Food waste & sewage treatment	-	-	-	OMR 5000	x	x	
						OMR 134.921	OMR 131.130	OMR 135.000

Figs. 22a-b (above and opposite page): costing of Phase-1 interventions and associated map



INTERVENTIONS

- F4 - entrance gate and room above
- B1 - restaurant
- A10 - kitchen/bakery
- passage from entrance gate to communal space known as Harat as-Shua'
- parking spaces

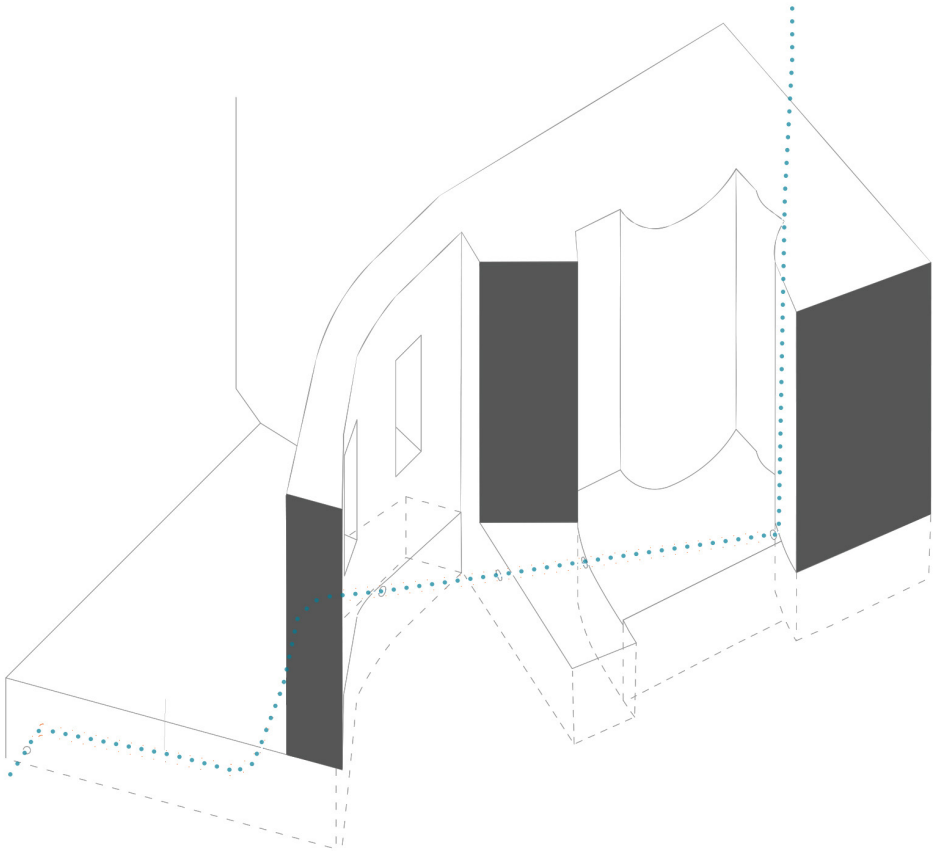
Renewable energy production has been suggested at the scale of the settlement to reduce dependency on fossil fuels through domestic storage of **solar energy with Li-ion batteries**, coil turbines to be installed in the irrigation channels (*aflaj*), **solar panels** for domestic water heating and **PV panels** for street lighting, **biogas** produced from human and agricultural waste (**Fig. 23**).

Fig. 23 (above): renewable energy production systems

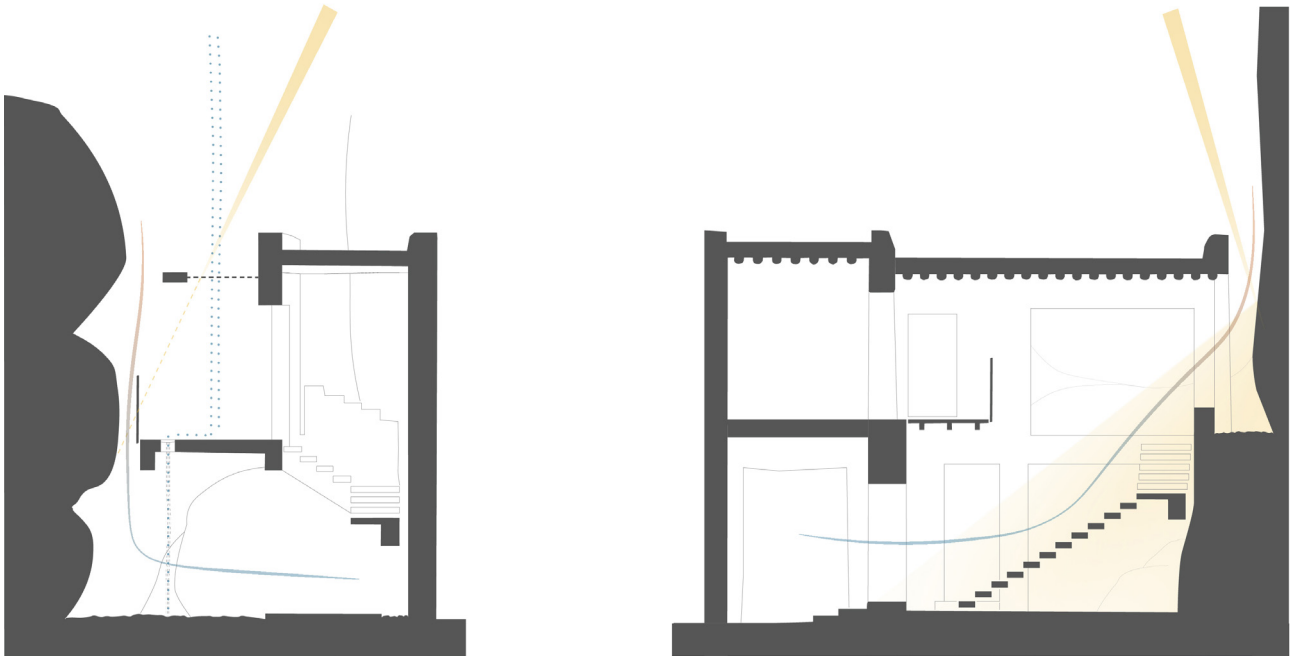
Fig. 24 (opposite page): bakery (A10), timber slatted trellises

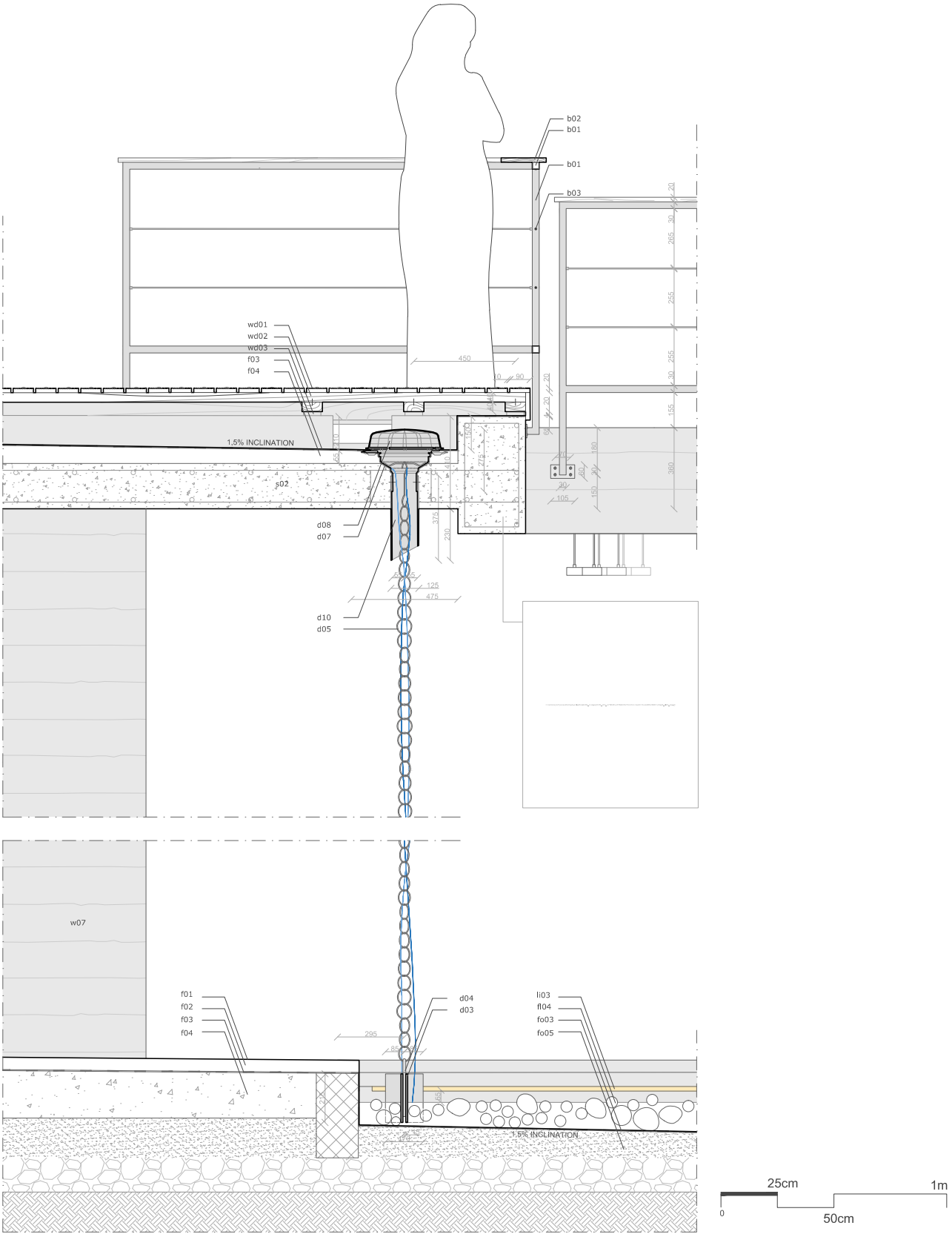
Environmental passive design measures have been adopted in the developed buildings with the aim to:

- provide shading over terraces through **timber slatted trellises** (F4 and A10) (**Fig. 24**);
- optimize rainwater drainage through **channels, metal rain chains** (F4; B1) and **sheet metal spouts** (B1) (**Figs. 25a-b, 27a-b-c**) that collect and guide water down from rooftops through internal rock gardens;
- maximize internal air movement, thus removing the need for mechanical air conditioning, through the creation of **deep interiors** (**Figs. 26a-b, 28a-b**) and **double-height spaces** (**Fig. 29**) working as air shafts, which have been modelled out of the voids left by collapsed structures.

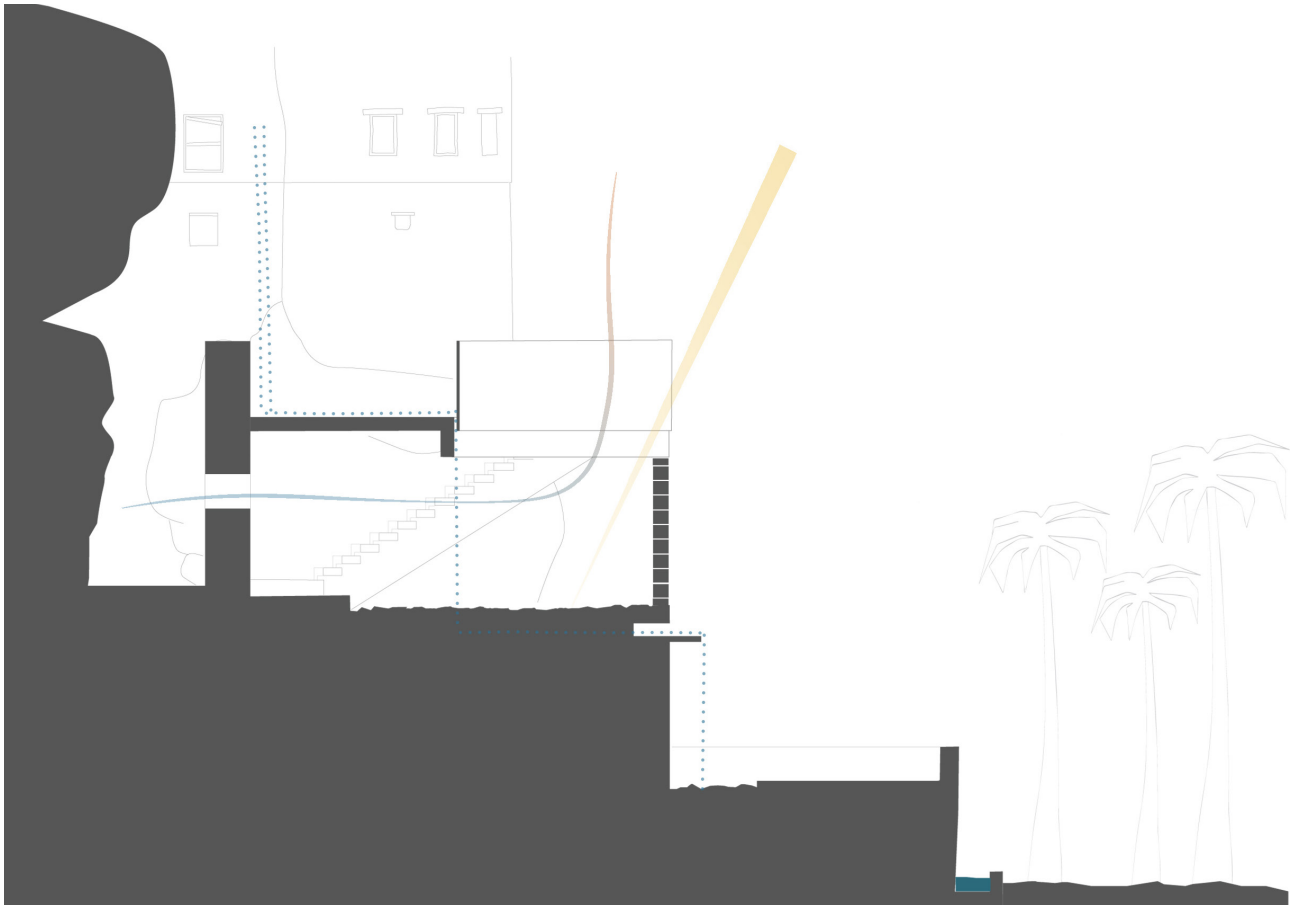


Figs. 25a-b (opposite page and above): info point (F4), rock garden and drainage system
Figs. 26a-b (below): info point (F4), environmental sections

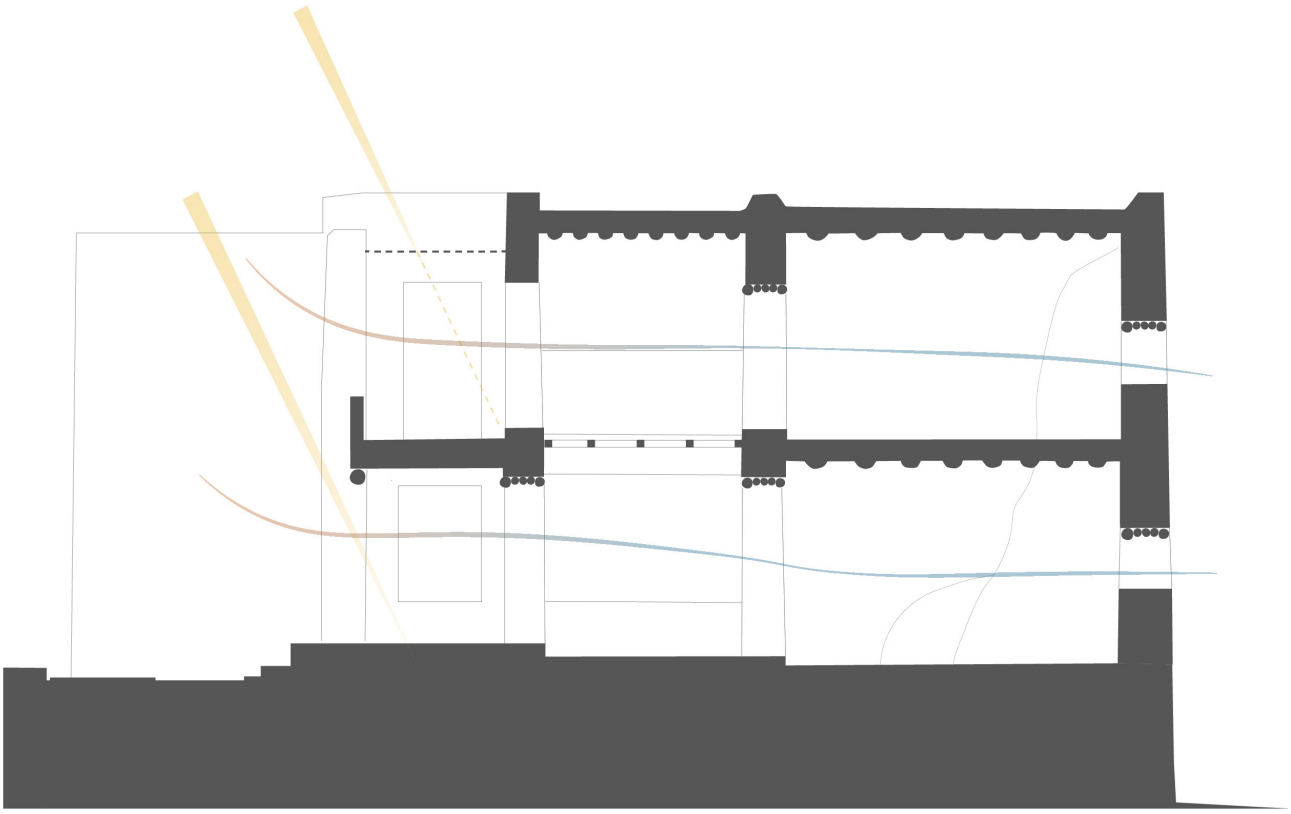




Figs. 27a-b-c (above and opposite page): restaurant (B1), rock garden and drainage system



Figs. 28a-b (above and below): bakery (A10), environmental sections
Fig. 29 (opposite page): bakery (A10), rock garden



RQ 5. How can contemporary architectural aspirations and use be integrated with conservation demands?

The approach adopted in the development of the chosen sites is **to preserve their traditional fabric and spatial qualities**, along with the intangible values associated with them, **in a way that sympathetically marries the new programme within the host structures.**

Conservation, reconstruction and new build are carried out in accordance with international guidelines for conservation and development within heritage contexts: Venice Charter (1964); Riga Charter (2000); and Burra Charter (2013). A wide spectrum of **conservation actions** (**Fig. 30**) was identified, based on the analysis of the individual sites' condition (**Figs. 31a-b**):

- original spatial configurations were retained while plan layouts were altered in order to accommodate the new programmes;
- existing dilapidated walls and floors were rebuilt with traditional materials and construction techniques, based on the most recent evidence;
- collapsed walls and openings were rebuilt with traditional materials but modern construction techniques;
- new walls and openings were built with modern materials and construction techniques.

The design schemes aim at reinstating the buildings' values and their impact on the immediate context by simultaneously preserving the old 'host' fabric and introducing new life into it. This carries the host forward into the present and establishes a fresh dialogue with the new. In all the design interventions the old acts as the 'carrier' of meaning, memories and identity values (**Astorg Bollack, 2013**).

The new gives the old renewed meaningfulness and relevance for 21st century living in Misfat al-'Abriyin.

Fig. 30 (above): restaurant (B1), conservation actions

Figs. 31a-b (opposite page and below): restaurant (B1), existing condition in 2017

The host buildings become part of a continuous process in time, meaningfully contributing to the present (**Scott, 2008; Jäger, 2010**). The design works as much with **typology and the visible traces of history and past use**, as with **spatial perceptions and atmosphere**, light, air and water (**Jäger, 2010**).

Situatedness

The 3 dwellings identified at Misfat differ in:

- *aspect*, from introverted with little external views (F4) to offering view over the contained Harat ash-Shua event area (A10) to extroverted, overlooking the oasis plantation (B1);
- *scale*, from small (F4) to medium (A10) and large (B1).

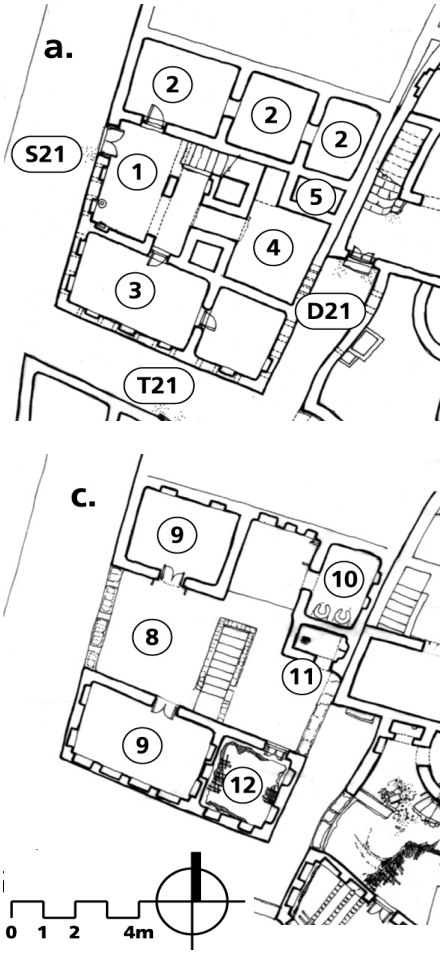
Type and atmosphere

Thorough study of the central Omani house type, to which all Misfat dwellings belong, provides:

- the original understanding of *order* (**Bandyopadhyay, 2004; 2006; 2011**);
- *distinction* between ground (agrarian/ semi-private) and first (domestic/ private) floors (**Figs. 32, 33**).

The new programmes are: Information Centre (F4); Bread-making and training (A10) and Restaurant (B1). The introspective privacy of the upper floors is maintained in the designed schemes, while the use changes to (GF/FF): shops/ gallery (F4); bread making/ history and experience (A10); public restaurant/ family rooms (B1).

Fig. 32 (below, left): ground floor and first floor plans of Barwani dwelling in Harat al-Bilad
Fig. 33 (below, right): staircase leading to the first floor of a dwelling in Manah
Fig. 34 (opposite page): bakery (A10), new concrete staircase



• The staircase connecting the floors provides a *measure of the distinction*: it avoids direct view into first floor terrace by employing a tight passage (**Fig. 34**), baffles and doglegs, graded by light (dark/ bright light), humidity (humid/ dry) and the penetration of rain;

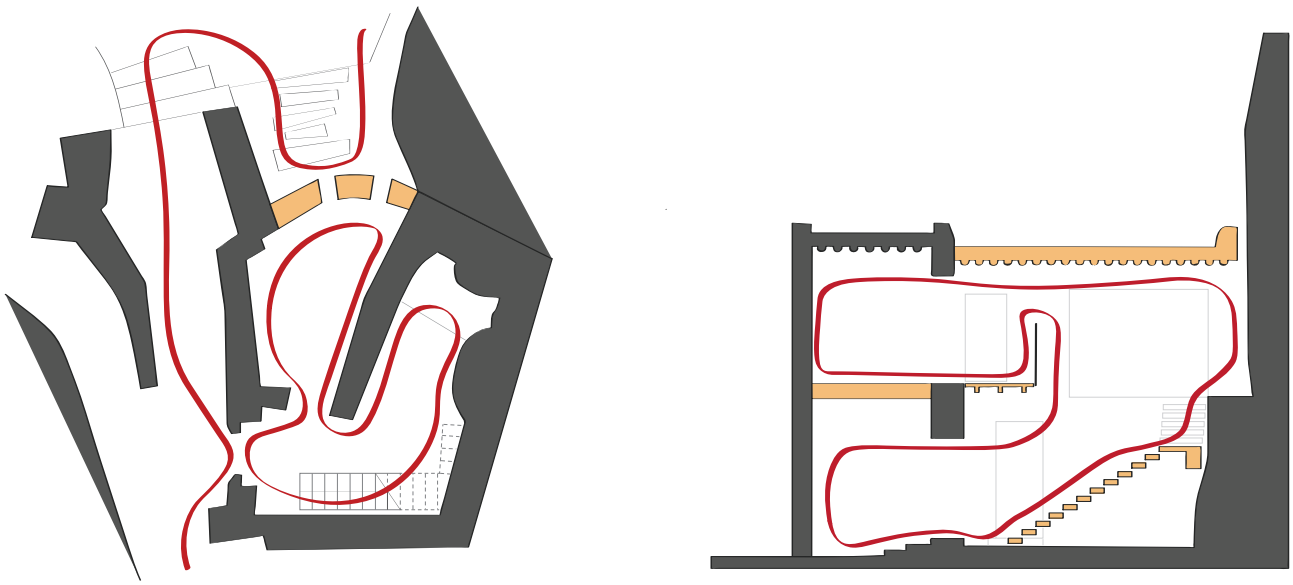
Doglegs (in F4 & A10) (**Figs. 35, 36**) and baffles (B1) (**Fig. 37**) are maintained while the stair area is opened up through double height vestibules in response to the connected public touristic functions.

• The terrace on first floor is the heart of the introspective domestic life and yet provides *renewed references* to the dwelling's immediate surroundings and the context/ terrain beyond the settlement.

The terrace is maintained and manipulated to enhance appreciation of atmosphere and scale. In F4, a new 'introspective' terrace is created to present the terrain revealing the rock face, its contours highlighted by shadows thrown by the reed trellises (**Fig. 38**). In A10, the staircase landing reaffirms the terrain by offering a view of the rocky terrain and the reed-trellised terrace presides over the Harat ash-Shua, underscoring the performance space it is. In B1, slatted folding doors of the restaurant ground floor and the open terrace on the first floor offer views of the oasis plantation beyond. The rainwater drainage system, when activated with precipitation, offers a reminder of the *aflaj* irrigation through the sound of flowing water.

A range of design tactics were employed that respond to

Fig. 35 (below): bakery (A10), double-height entrance vestibule
Fig. 36 (opposite page): info point (F4), double-height entrance vestibule
Fig. 37 (over page, left): restaurant (B1), concrete staircase leading to the first floor terrace
Fig. 38 (over page, right): info point (F4), reed trellises in the new 'introspective' terrace



Figs. 39a-b: info point (F4), design diagrams (above) based on the existing condition (below)

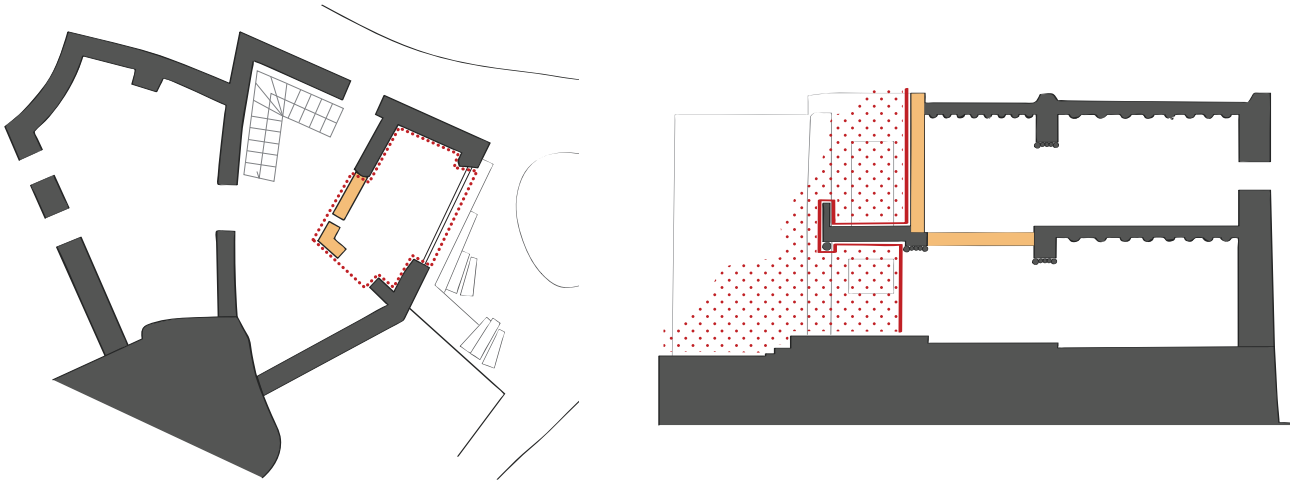
international best practice in adaptive reuse design of historic fabrics.

- **Weavings** knit new and old, in and out of the original fabric by editing, foregrounding, underplaying existing features, recreating lost elements and spaces and introducing new elements (**Astorg Bollack, 2013; Wong, 2017**).

The originally self-contained rooms in F4 and A10 are connected together through double-height entrance vestibules (**Fig. 40**) created out of the voids left by the collapse of the upper floors (**Figs. 39a-b**) and a new concrete staircase detached from the old fabric, both unequivocally asserting their otherness.

- **Reinstatements** and **façade redefinition** re-establish

Fig. 40: info point (F4), double-height entrance vestibule



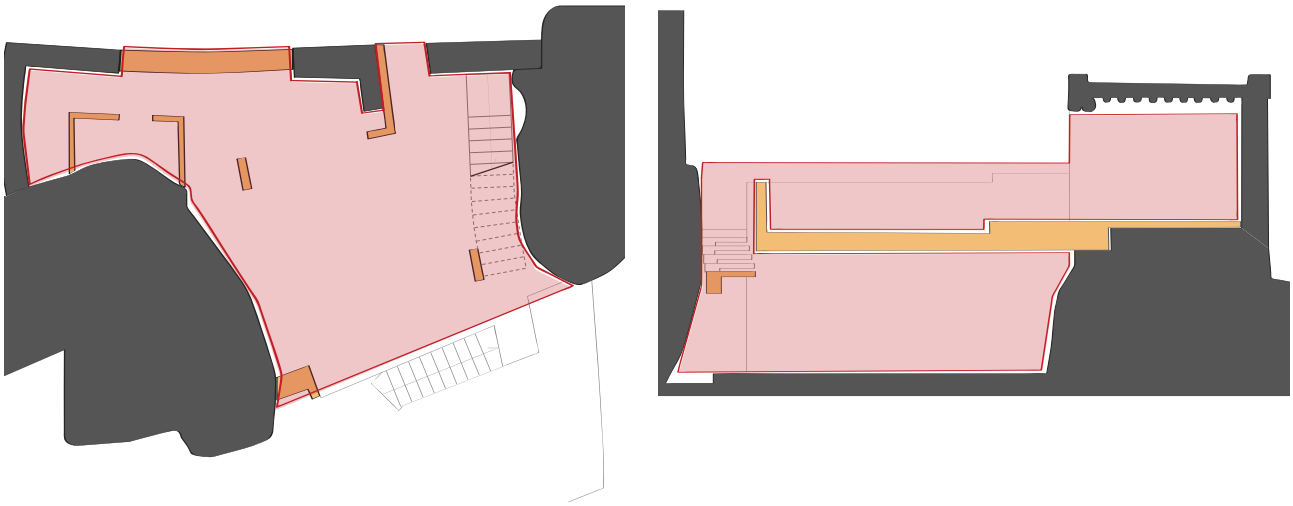
Figs. 41a-b: bakery (A10), design diagrams (above) based on the existing condition (below)

the unity of the whole by enhancing the traditional typology through sympathetic repurposing (**Wong, 2017**).

A new façade is created in A10 through the discreet insertion of a terrace into the existing void, which is thus shaped and re-signified (**Figs. 41a-b**). The new façade states a new identity for the building, thus activating and catalysing new urban values that reverberate beyond the confines of the building into the surrounding Harat ash-Shua open space (**Fig. 42**).

- **Insertions** reanimate and re-signify a ruinous structure,

Fig. 42: bakery (A10) and Harat ash-Shua during construction



Figs. 43a-b: restaurant (B1), design diagrams (above) based on the existing condition (below)

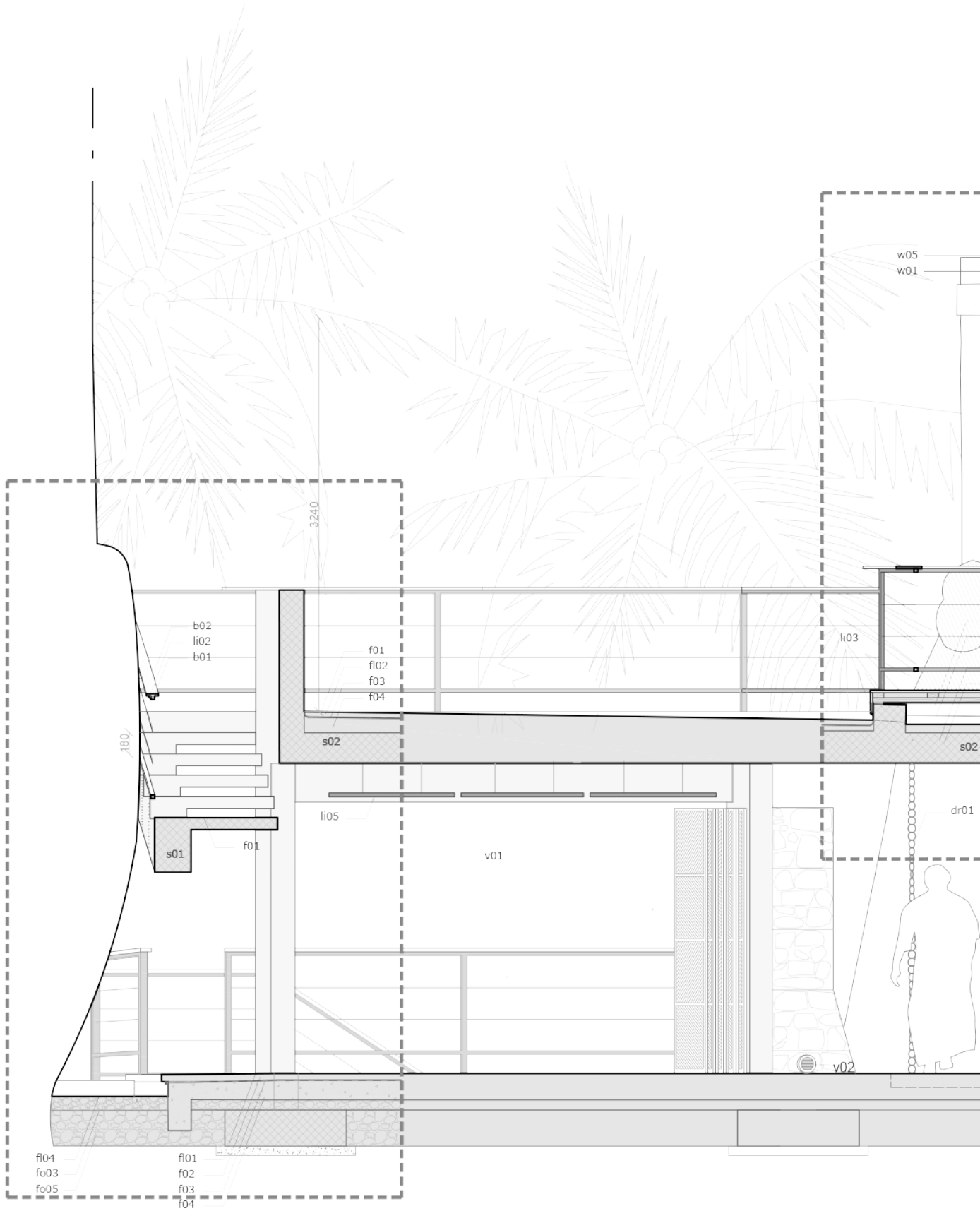
enabling the host to serve the new programme (**Astorg Bollack, 2013**).

A new concrete insertion, slotted within B1 (**Figs. 43a-b**), cohesively unifies the ruins while providing a fully equipped modern dining place, which establishes a harmonious whole with both the existing rocky outcrop and the restored first floor rooms (**Figs. 44, 45a-b-c**).

- **Familiarity** provided by the traditional dwelling context (traditional tectonic; stone-mudbrick; rough) into which **the new**, unfamiliar element of the staircase (modern tectonic; crafted concrete; polished) is inserted (**Pérez-Gómez, 2020**). The staircase, drawn from the contemporary world, helps to recontextualise the familiarity of the restored dwelling (questions conservation), which in turns questions via the staircase the contemporary world. The uniform staircase design brings cohesion through standardization but also introduces universality.

Fig. 44: restaurant (B1) during construction

Figs. 45a-b-c: restaurant (B1), concrete insertion and shading system in the dining area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w01
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b02
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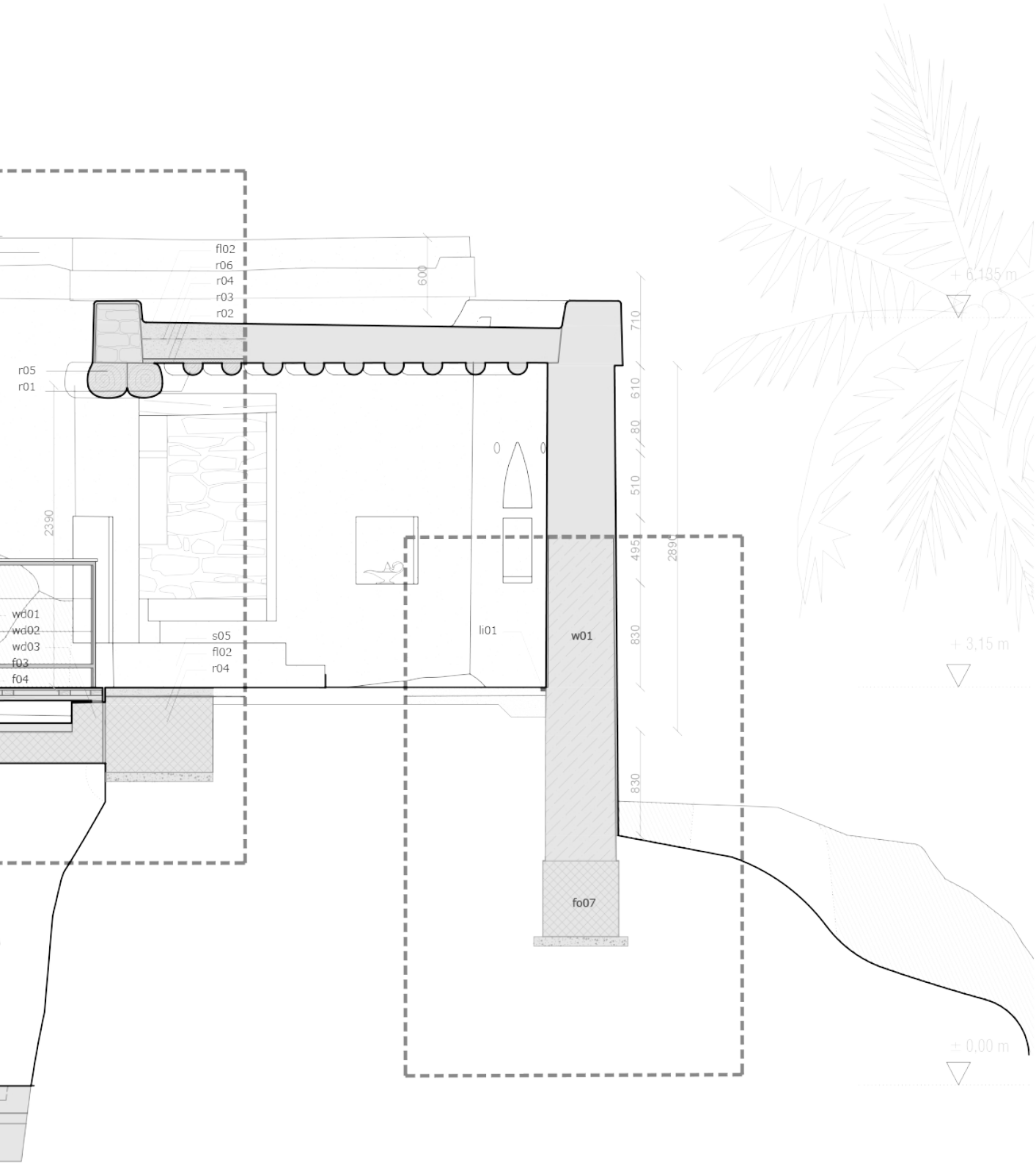
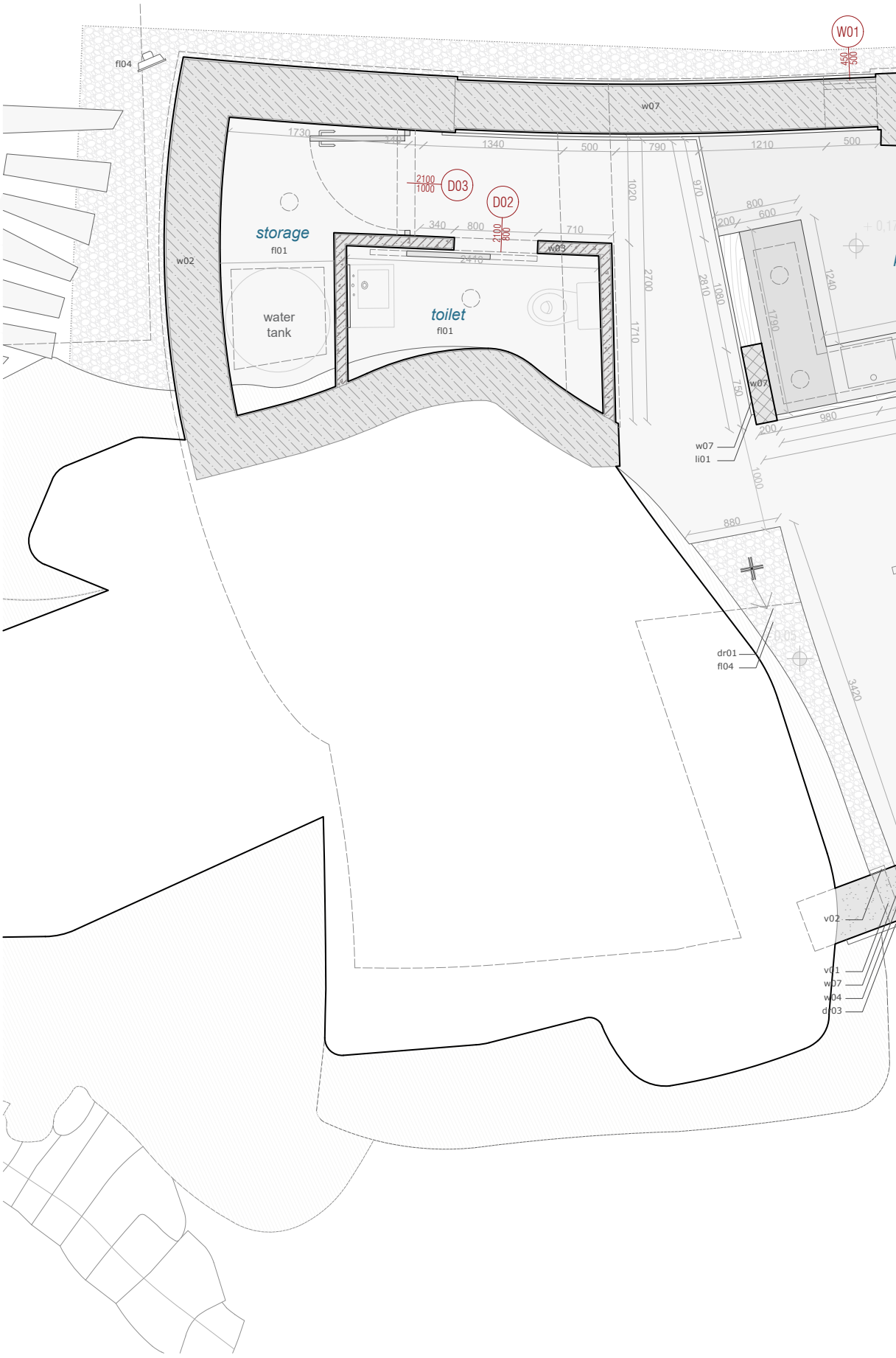


Restaurant (B1), east-west section


W01
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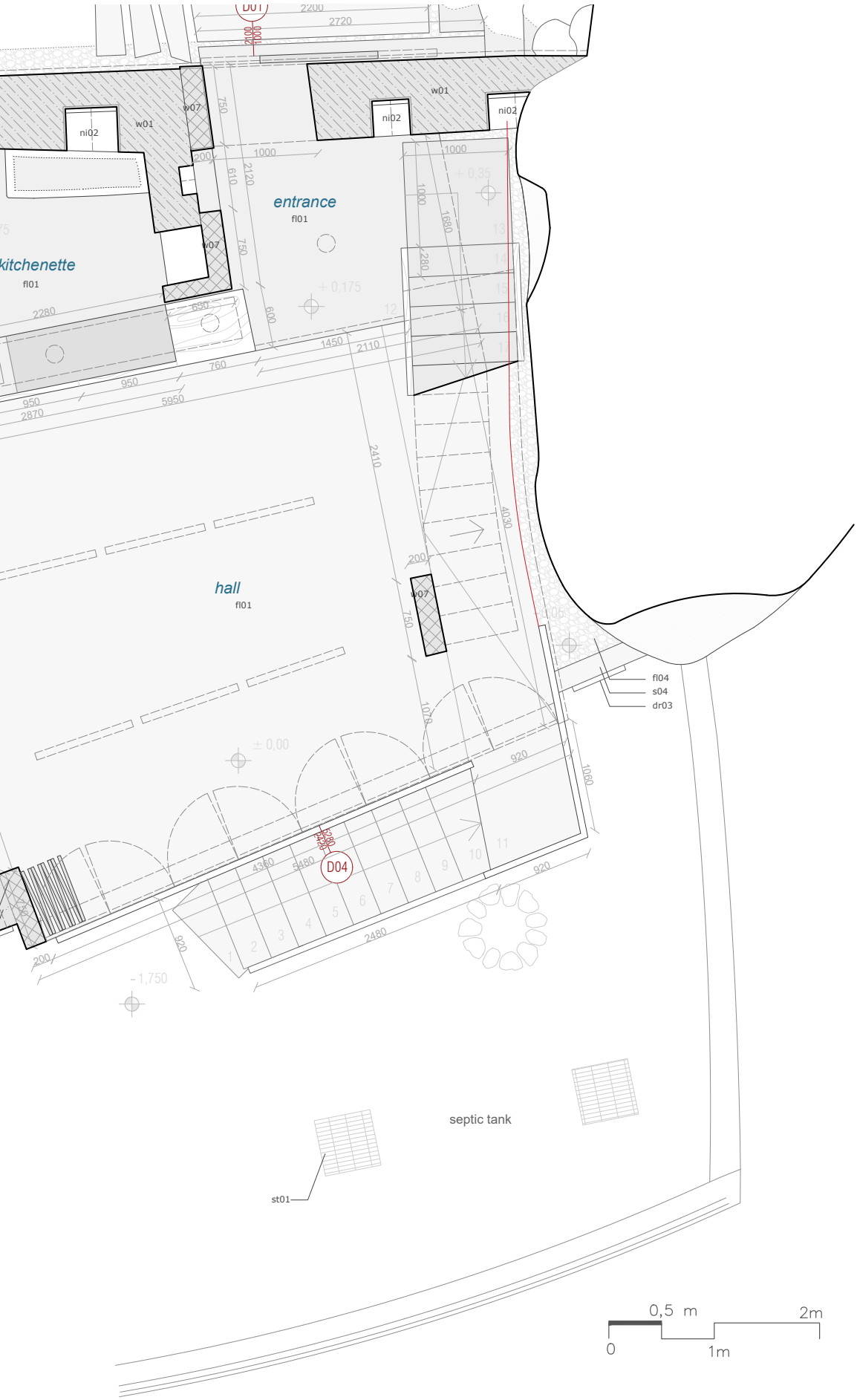
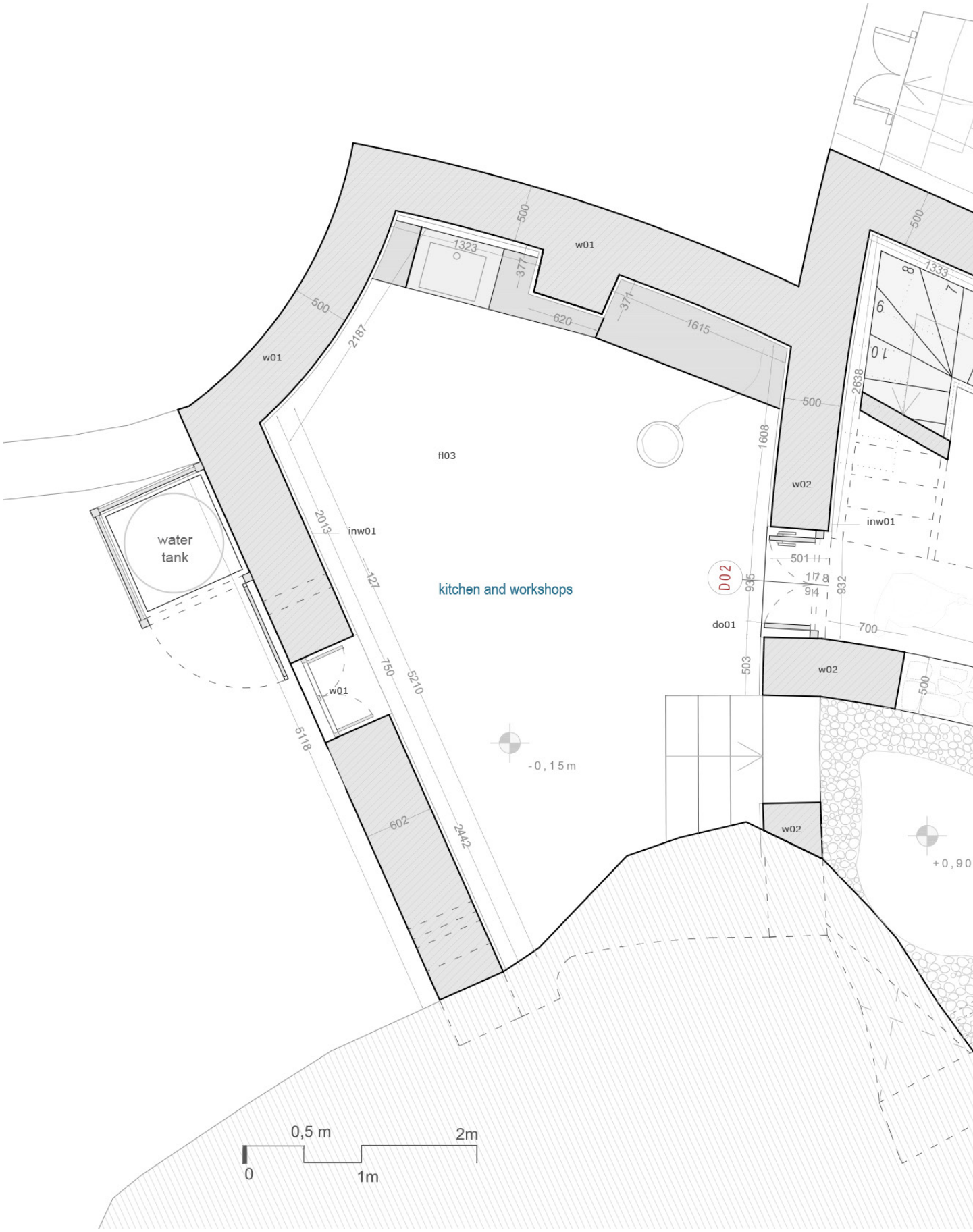


Restaurant (B1), ground floor plan


water tank
kitchen and workshops
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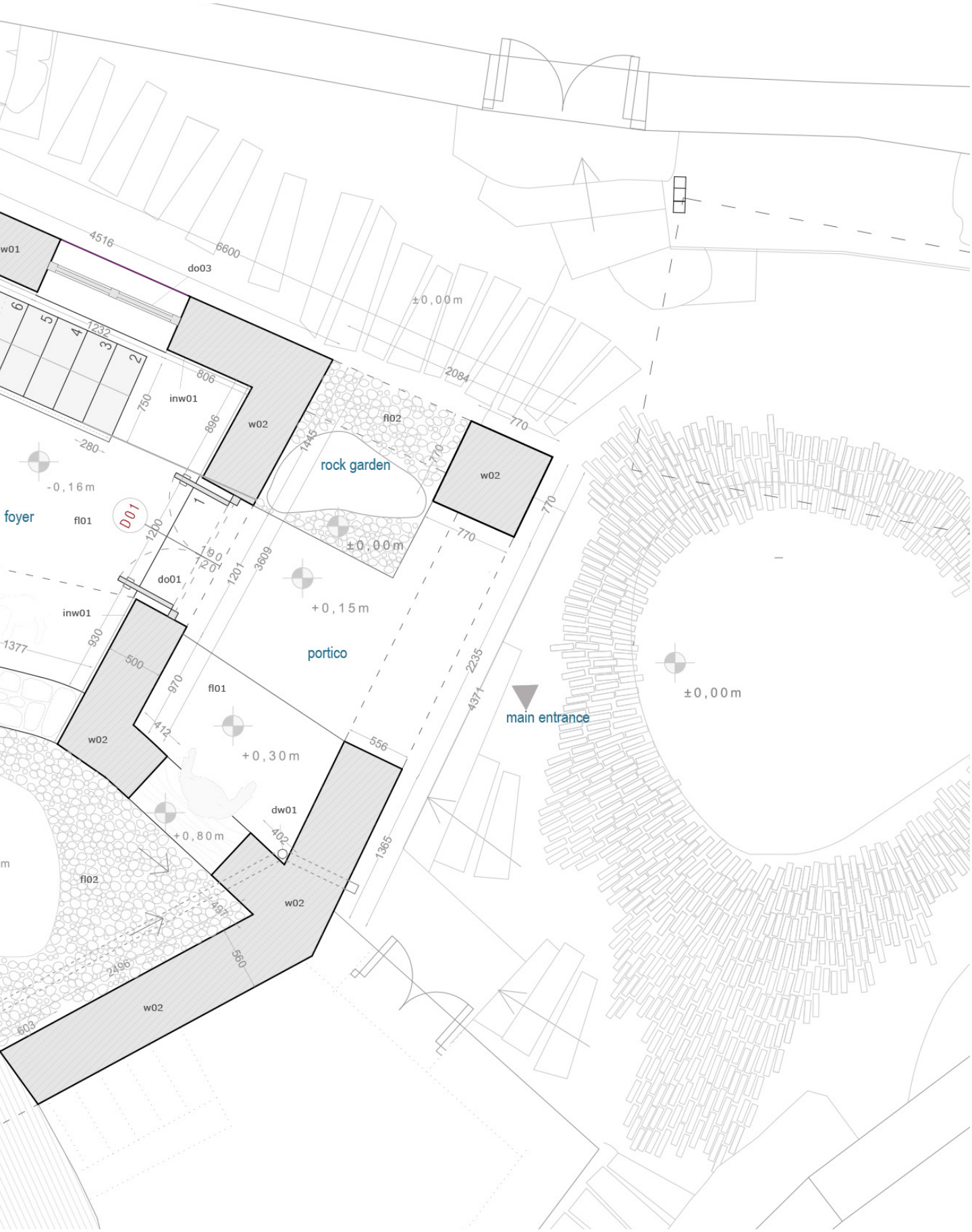
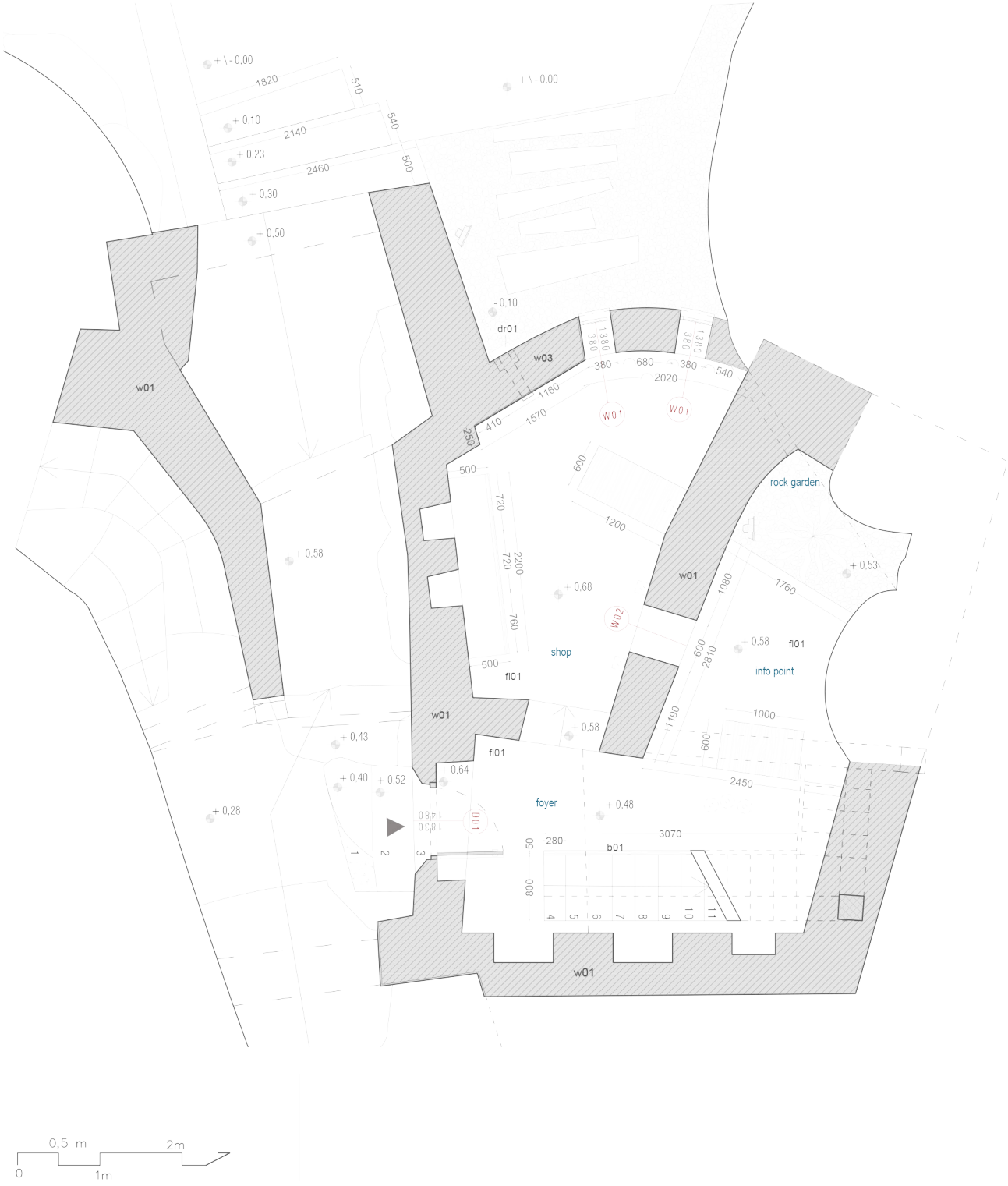
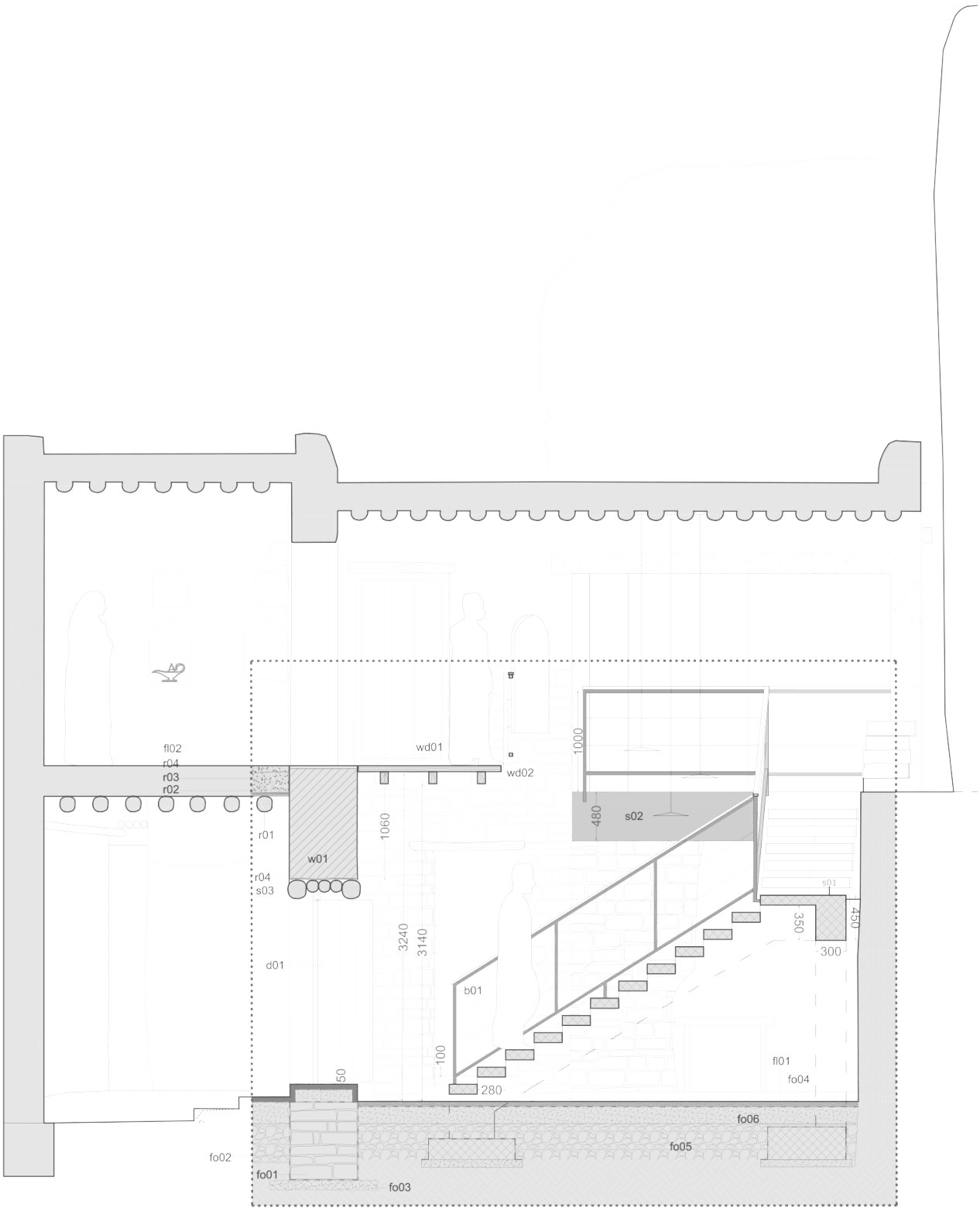
w01
w02
inw01
do01
D02
-0,15m
+0,90
0,5 m
2m
0
1m



Bakery (A10), ground floor plan



Info-point (F4), ground floor plan



Info-point (F4), east-west section

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www.archiam.co.uk
info@archiam.co.uk